Pantheon Report

Generated at 2018-12-01 04:09:00 (UTC).

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

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.
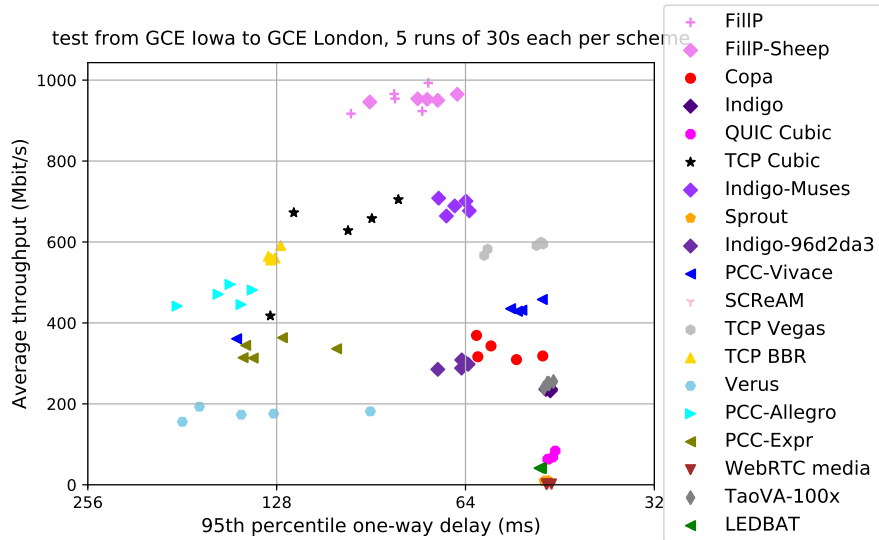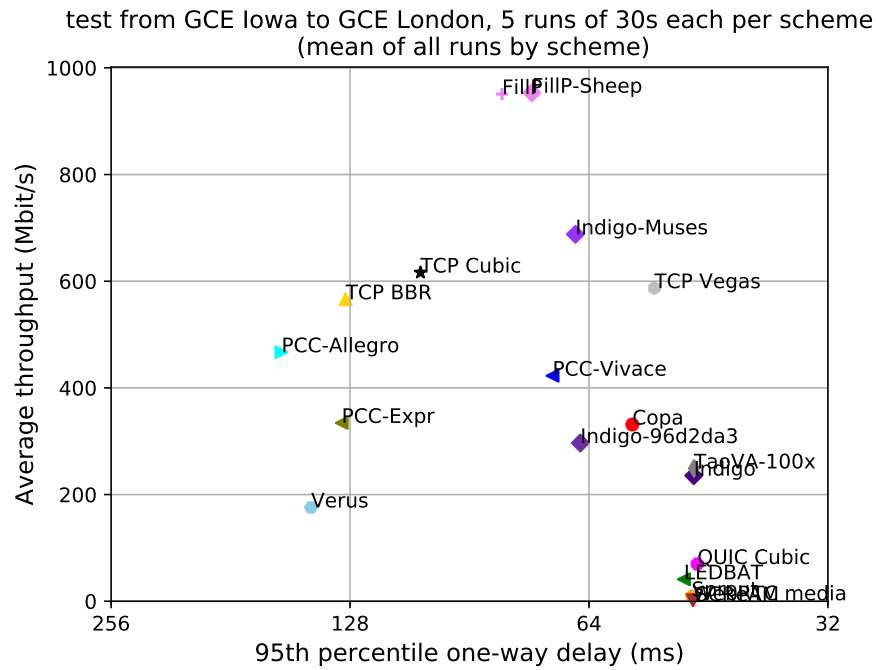
```
System info:
Linux 4.15.0-1024-gcp
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:
branch: muses @ 7b6dad87cde3ab65f7c4052140eb54098aa58e9d
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
 M src/ScreamClient
 M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
 M src/examples/cellsim.cc
 M src/examples/sproutbt2.cc
 M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
 M tools/plot.py
```

```
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```
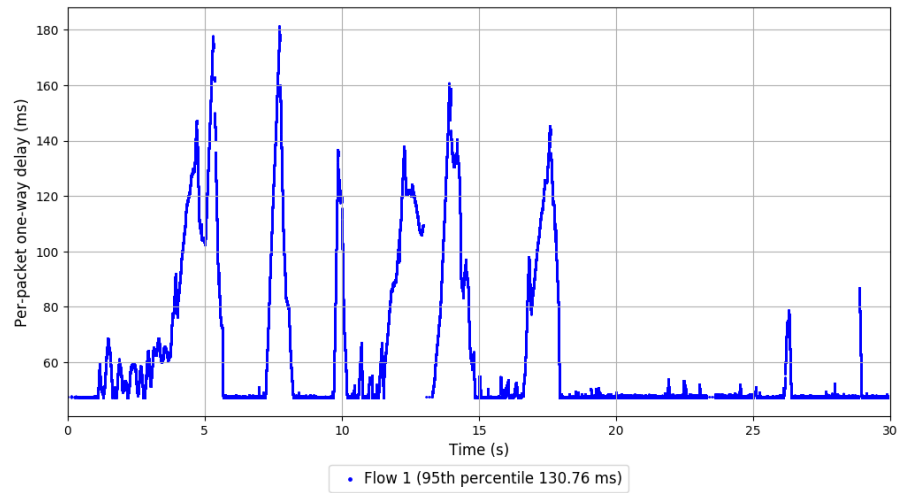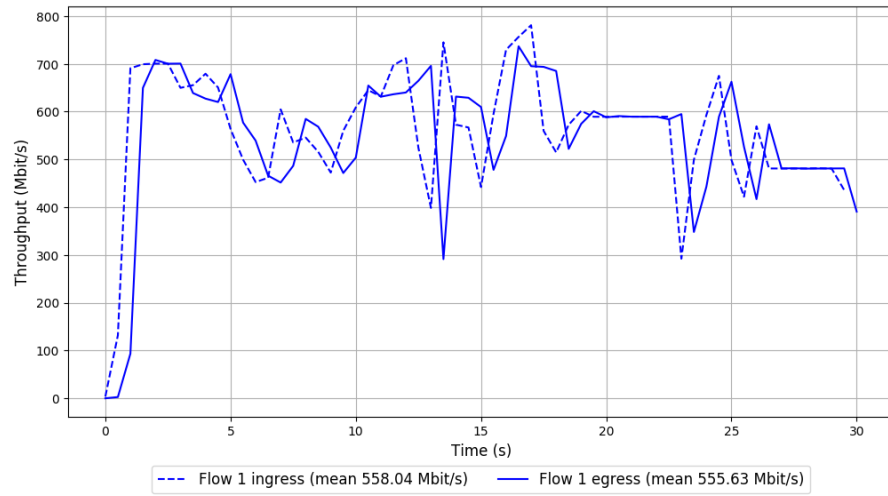
test from GCE Iowa to GCE London, 5 runs of 30s each per scheme
(mean of all runs by scheme)

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

scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	5	566.18	129.64	0.85
Copa	5	331.28	56.44	0.31
TCP Cubic	5	616.21	104.36	0.35
FillP	5	950.78	82.37	0.41
FillP-Sheep	5	953.43	75.54	0.35
Indigo	4	235.48	47.22	0.32
Indigo-96d2da3	5	296.59	65.63	0.33
LEDBAT	5	41.08	48.60	0.62
Indigo-Muses	5	687.91	66.57	0.34
PCC-Allegro	5	466.81	156.18	2.48
PCC-Expr	5	334.27	131.16	3.92
QUIC Cubic	4	69.79	46.74	0.48
SCReAM	5	0.22	47.05	0.31
Sprout	5	9.57	47.55	0.36
TaoVA-100x	5	248.99	47.19	0.32
TCP Vegas	5	586.98	52.94	0.29
Verus	5	175.84	143.34	1.43
PCC-Vivace	5	422.81	71.15	0.78
WebRTC media	5	1.83	47.35	0.39

```
Run 1: Statistics of TCP BBR

Start at: 2018-12-01 00:15:38
End at: 2018-12-01 00:16:08
Local clock offset: -0.095 ms
Remote clock offset: -0.133 ms

# Below is generated by plot.py at 2018-12-01 02:33:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 555.63 Mbit/s
95th percentile per-packet one-way delay: 130.762 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 555.63 Mbit/s
95th percentile per-packet one-way delay: 130.762 ms
Loss rate: 0.75%
```
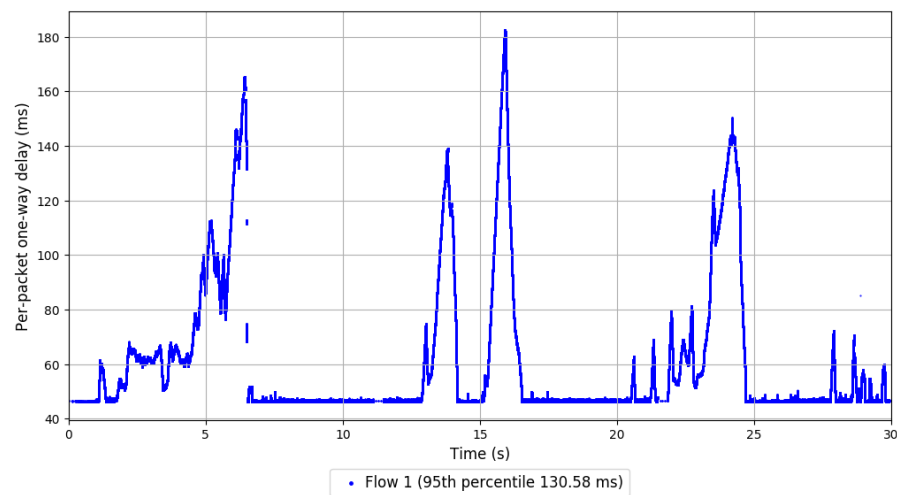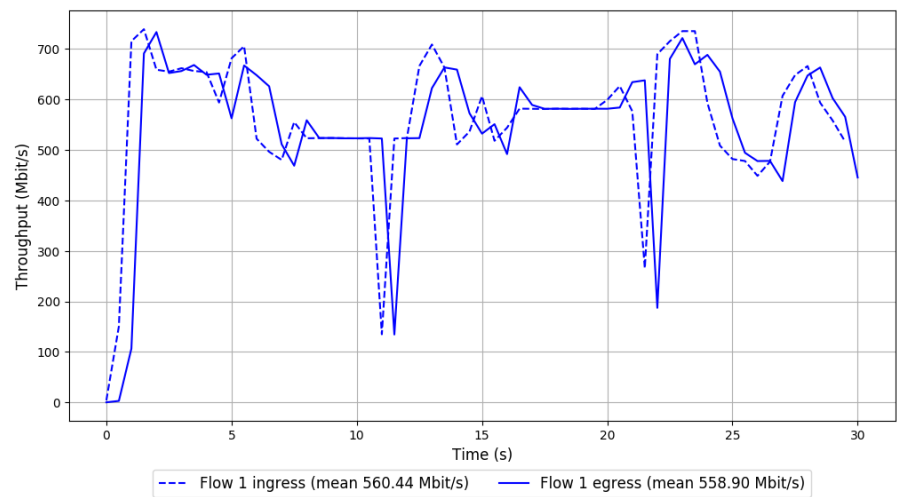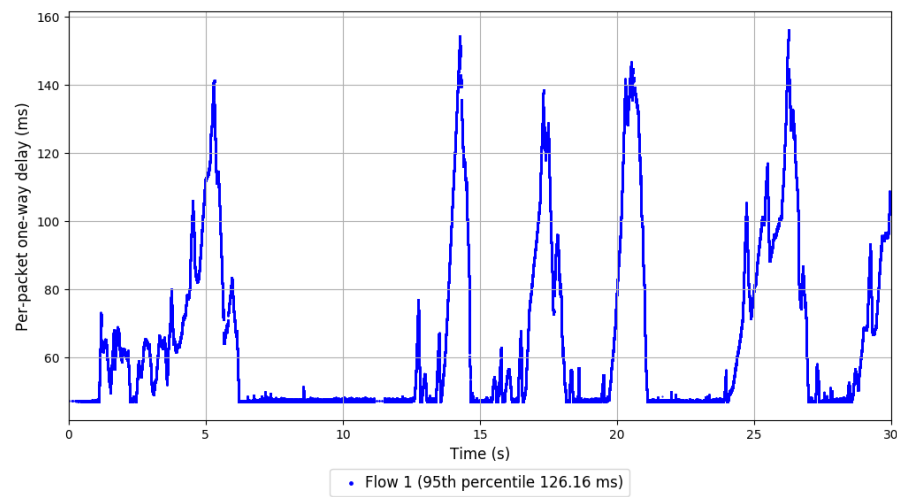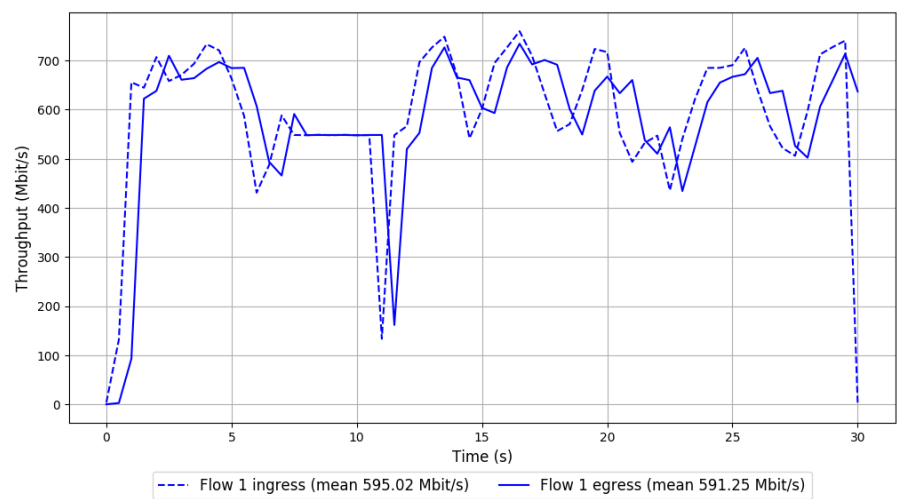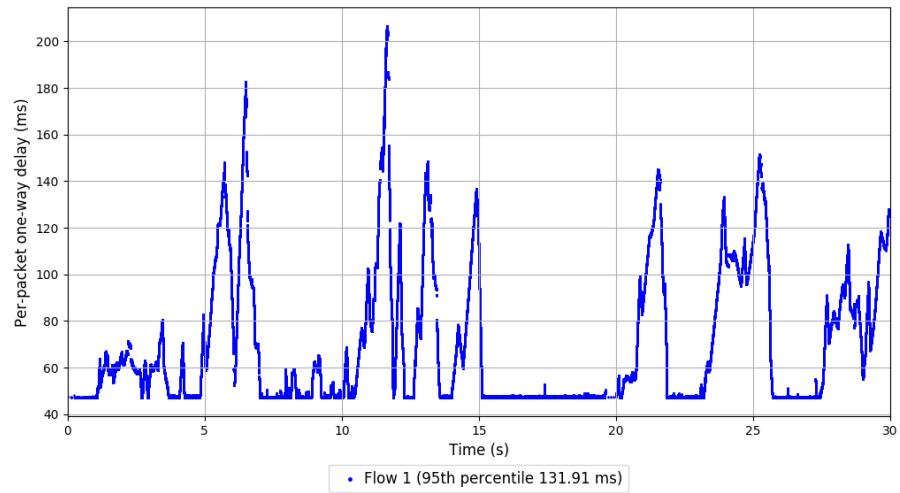
Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-12-01 00:44:03
End at: 2018-12-01 00:44:33
Local clock offset: -0.058 ms
Remote clock offset: 0.022 ms

# Below is generated by plot.py at 2018-12-01 02:33:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 558.90 Mbit/s
95th percentile per-packet one-way delay: 130.583 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 558.90 Mbit/s
95th percentile per-packet one-way delay: 130.583 ms
Loss rate: 0.59%
```
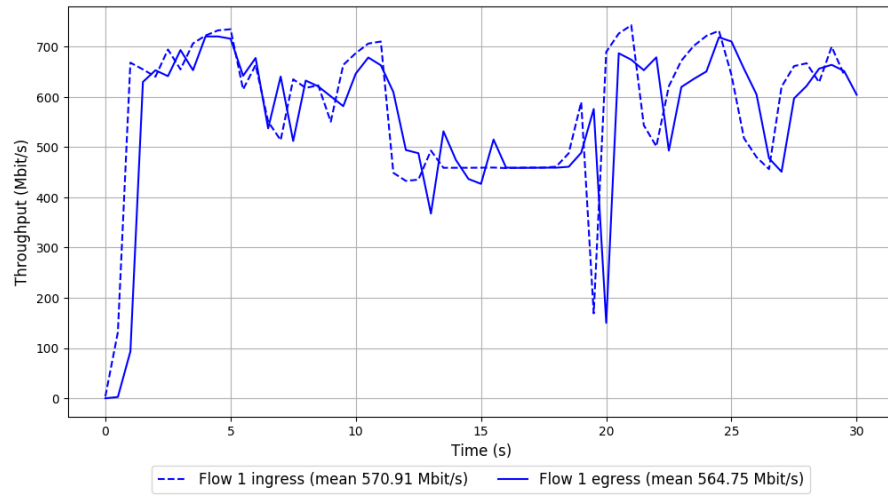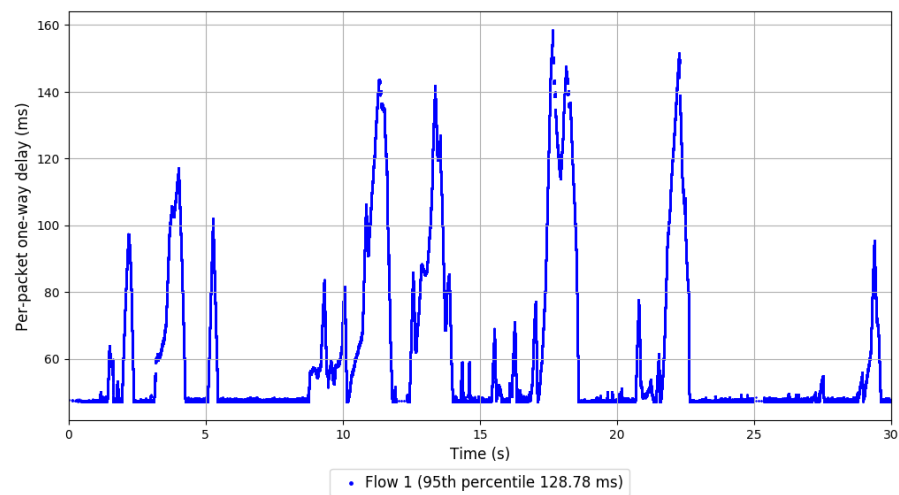
Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2018-12-01 01:12:08
End at: 2018-12-01 01:12:38
Local clock offset: -0.198 ms
Remote clock offset: -0.091 ms


# Below is generated by plot.py at 2018-12-01 02:34:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 591.25 Mbit/s
95th percentile per-packet one-way delay: 126.157 ms
Loss rate: 0.95%
-- Flow 1:
Average throughput: 591.25 Mbit/s
95th percentile per-packet one-way delay: 126.157 ms
Loss rate: 0.95%
```

Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 595.02 Mbit/s)   Flow 1 egress (mean 591.25 Mbit/s)
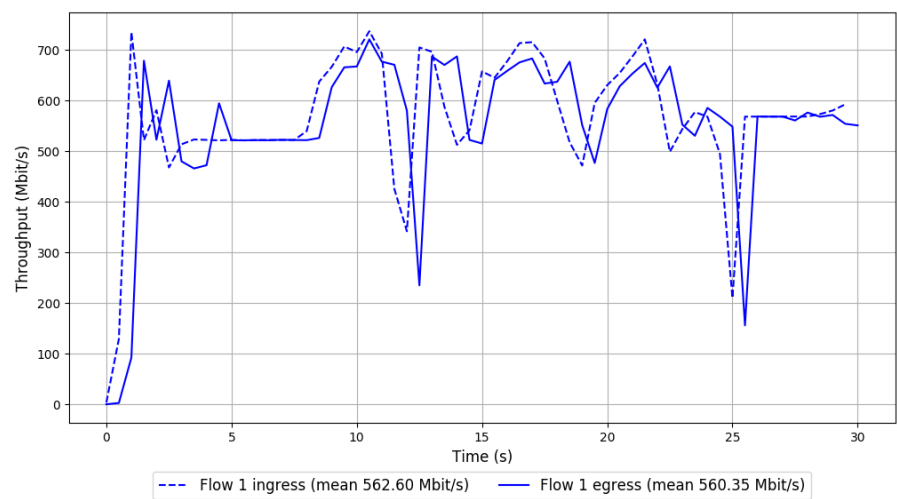

Flow 1 (95th percentile 126.16 ms)

```
Run 4: Statistics of TCP BBR

Start at: 2018-12-01 01:40:03
End at: 2018-12-01 01:40:33
Local clock offset: -0.107 ms
Remote clock offset: -0.084 ms


# Below is generated by plot.py at 2018-12-01 02:34:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 564.75 Mbit/s
95th percentile per-packet one-way delay: 131.914 ms
Loss rate: 1.24%
-- Flow 1:
Average throughput: 564.75 Mbit/s
95th percentile per-packet one-way delay: 131.914 ms
Loss rate: 1.24%
```
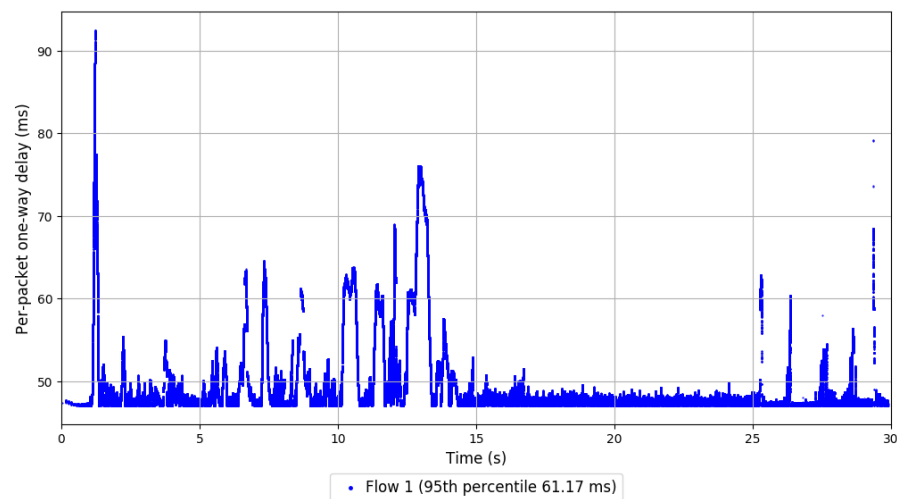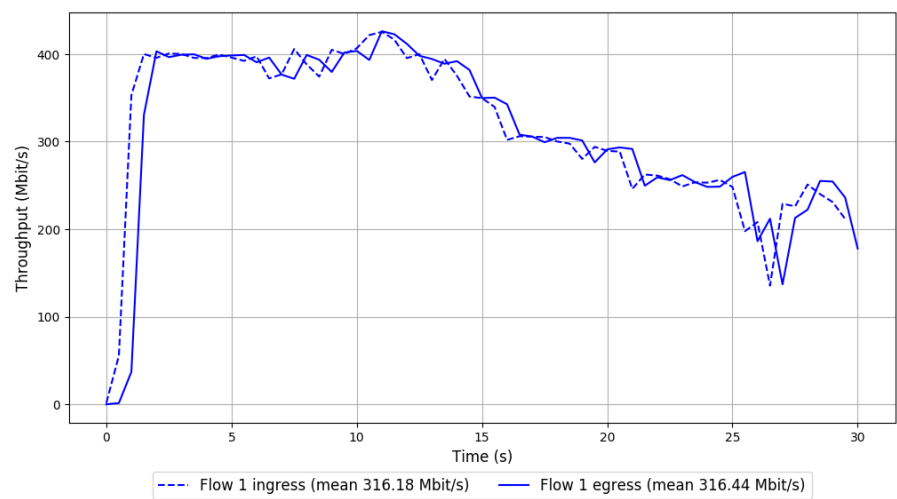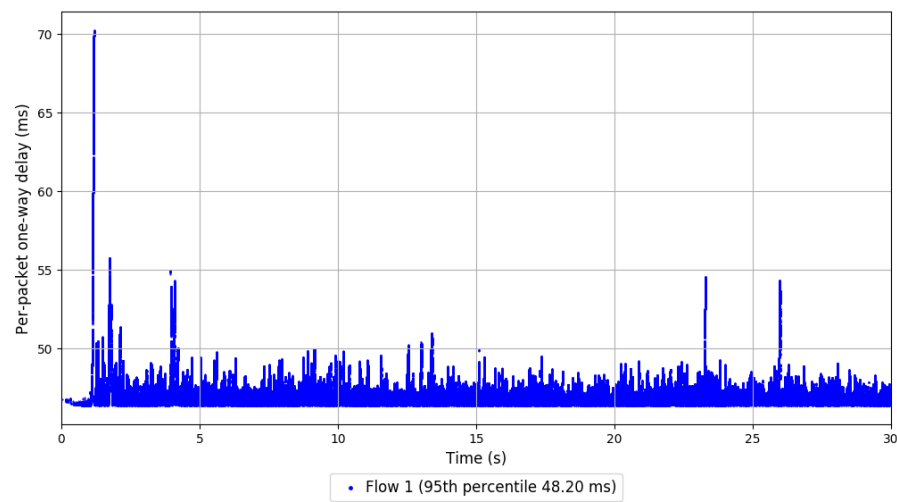
Run 4: Report of TCP BBR — Data Link

```
Run 5: Statistics of TCP BBR

Start at: 2018-12-01 02:08:17
End at: 2018-12-01 02:08:47
Local clock offset: -0.061 ms
Remote clock offset: -0.061 ms


# Below is generated by plot.py at 2018-12-01 02:34:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 560.35 Mbit/s
95th percentile per-packet one-way delay: 128.779 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 560.35 Mbit/s
95th percentile per-packet one-way delay: 128.779 ms
Loss rate: 0.71%
```

Run 5: Report of TCP BBR — Data Link

Flow 1 ingress (mean 562.60 Mbit/s) ———— Flow 1 egress (mean 560.35 Mbit/s)
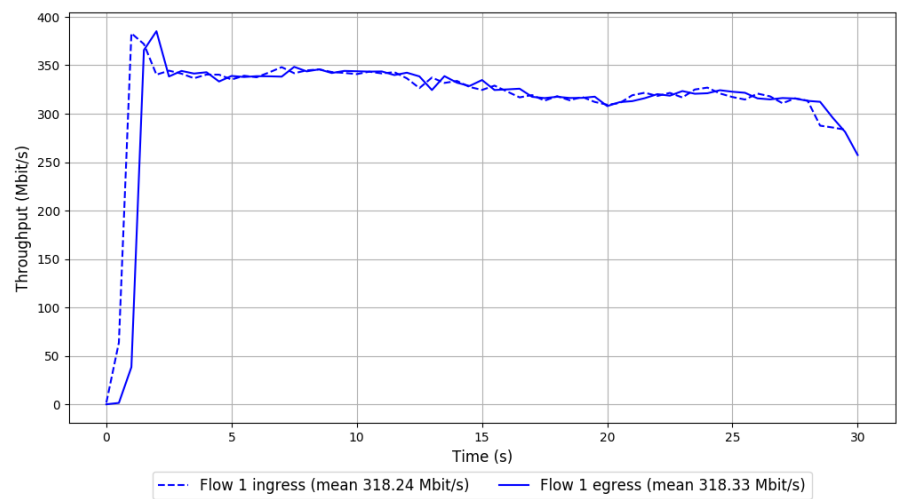

• Flow 1 (95th percentile 128.78 ms)

```
Run 1: Statistics of Copa

Start at: 2018-12-01 00:18:23
End at: 2018-12-01 00:18:53
Local clock offset: -0.097 ms
Remote clock offset: -0.122 ms

# Below is generated by plot.py at 2018-12-01 02:34:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 316.44 Mbit/s
95th percentile per-packet one-way delay: 61.175 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 316.44 Mbit/s
95th percentile per-packet one-way delay: 61.175 ms
Loss rate: 0.24%
```
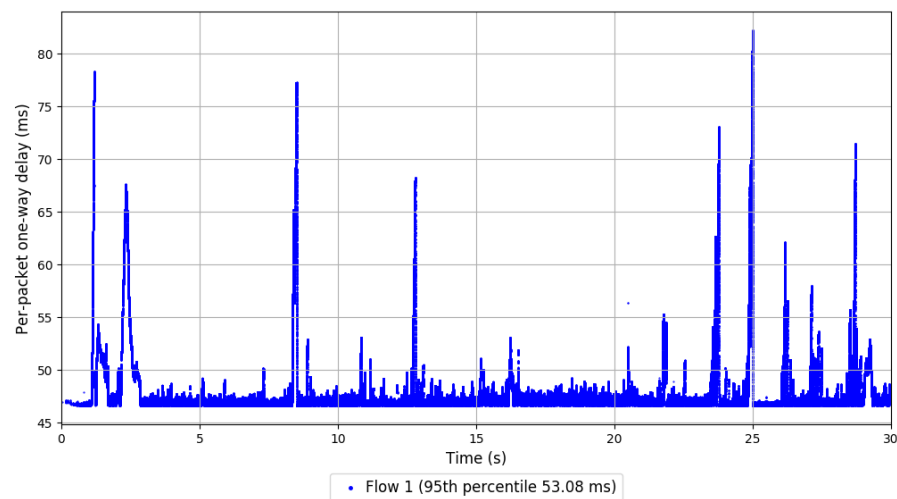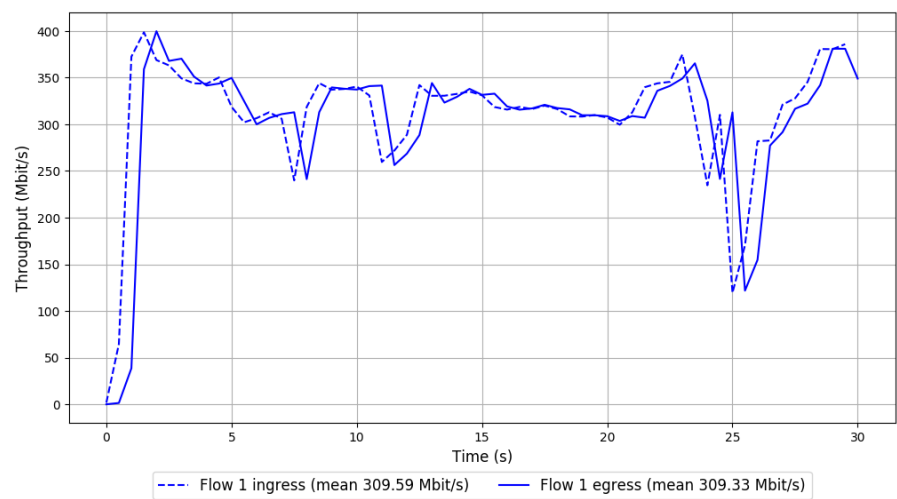
Run 1: Report of Copa — Data Link

```
Run 2: Statistics of Copa

Start at: 2018-12-01 00:46:57
End at: 2018-12-01 00:47:27
Local clock offset: 0.042 ms
Remote clock offset: -0.004 ms


# Below is generated by plot.py at 2018-12-01 02:34:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 318.33 Mbit/s
95th percentile per-packet one-way delay: 48.203 ms
Loss rate: 0.28%
-- Flow 1:
Average throughput: 318.33 Mbit/s
95th percentile per-packet one-way delay: 48.203 ms
Loss rate: 0.28%
```

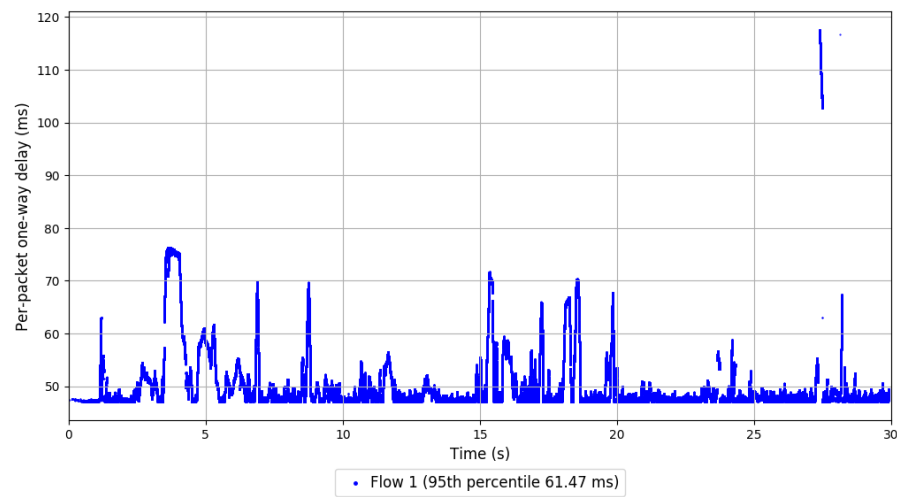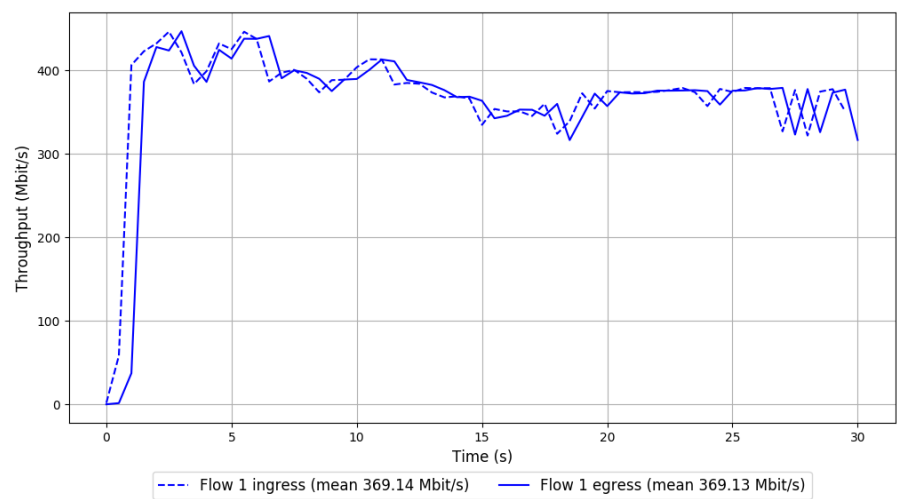Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2018-12-01 01:14:53
End at: 2018-12-01 01:15:23
Local clock offset: 0.184 ms
Remote clock offset: -0.075 ms


# Below is generated by plot.py at 2018-12-01 02:34:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 309.33 Mbit/s
95th percentile per-packet one-way delay: 53.077 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 309.33 Mbit/s
95th percentile per-packet one-way delay: 53.077 ms
Loss rate: 0.39%
```

Run 3: Report of Copa — Data Link

```
Run 4: Statistics of Copa

Start at: 2018-12-01 01:42:48
End at: 2018-12-01 01:43:18
Local clock offset: -0.128 ms
Remote clock offset: -0.033 ms


# Below is generated by plot.py at 2018-12-01 02:46:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 369.13 Mbit/s
95th percentile per-packet one-way delay: 61.467 ms
Loss rate: 0.32%
-- Flow 1:
Average throughput: 369.13 Mbit/s
95th percentile per-packet one-way delay: 61.467 ms
Loss rate: 0.32%
```
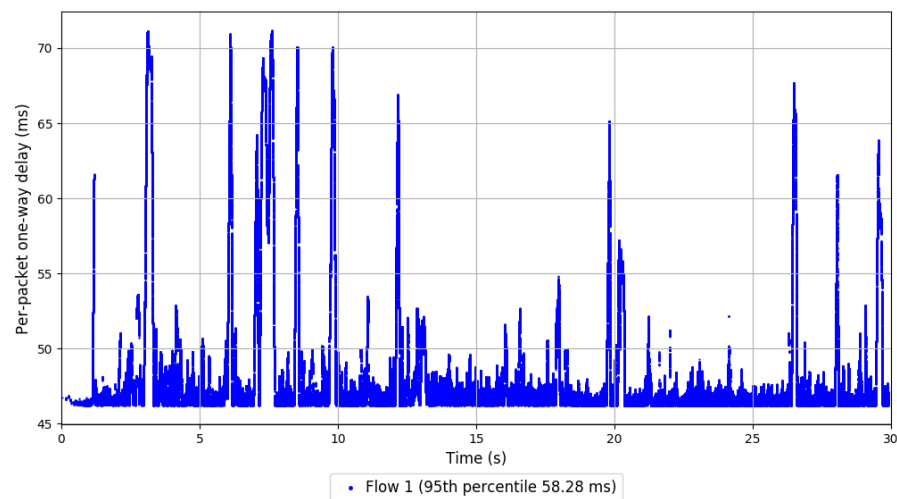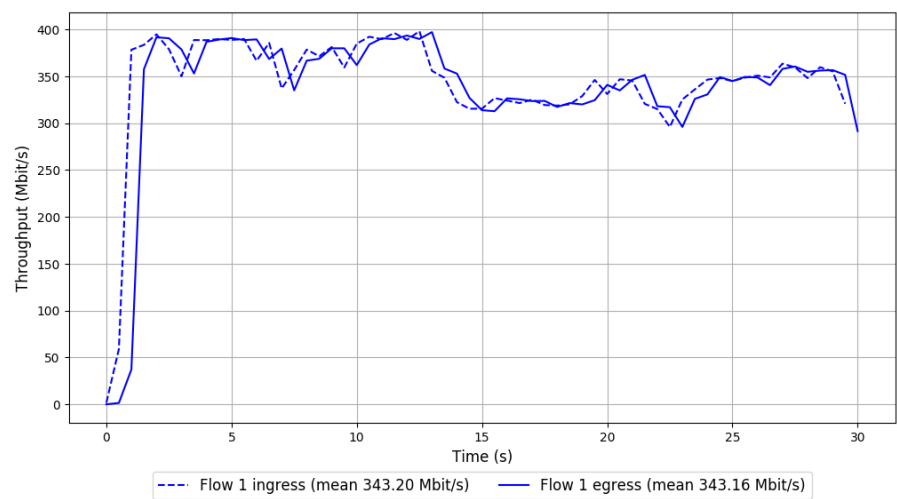
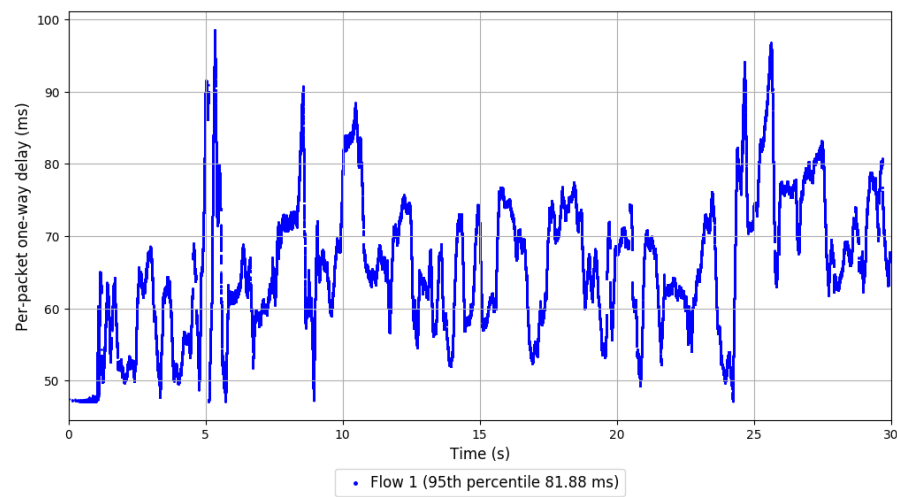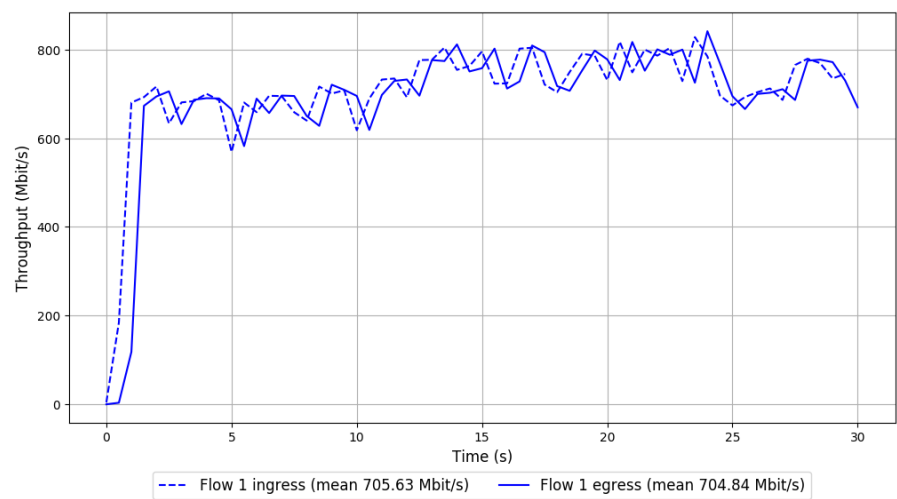Run 4: Report of Copa — Data Link

Flow 1 ingress (mean 369.14 Mbit/s) --- Flow 1 egress (mean 369.13 Mbit/s)

Flow 1 (95th percentile 61.47 ms)

```
Run 5: Statistics of Copa

Start at: 2018-12-01 02:11:02
End at: 2018-12-01 02:11:32
Local clock offset: -0.047 ms
Remote clock offset: 0.023 ms


# Below is generated by plot.py at 2018-12-01 02:46:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 343.16 Mbit/s
95th percentile per-packet one-way delay: 58.281 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 343.16 Mbit/s
95th percentile per-packet one-way delay: 58.281 ms
Loss rate: 0.33%
```

Run 5: Report of Copa — Data Link

Flow 1 ingress (mean 343.20 Mbit/s) —— Flow 1 egress (mean 343.16 Mbit/s)

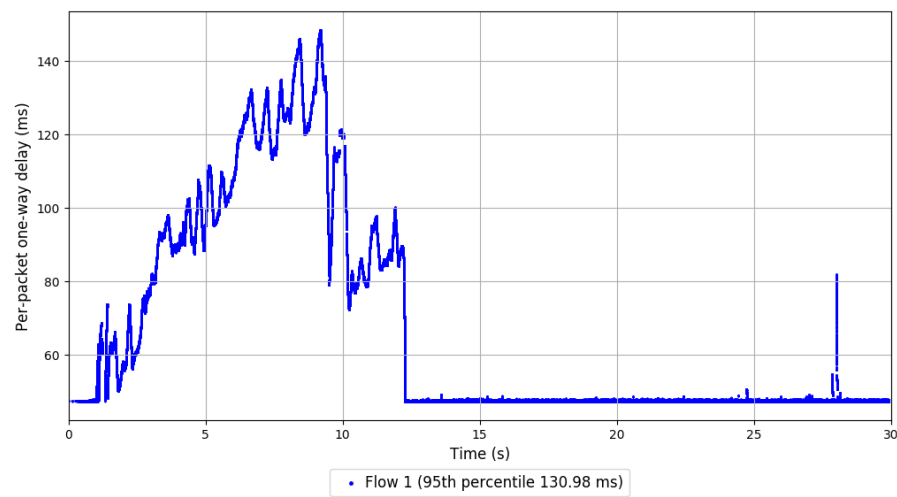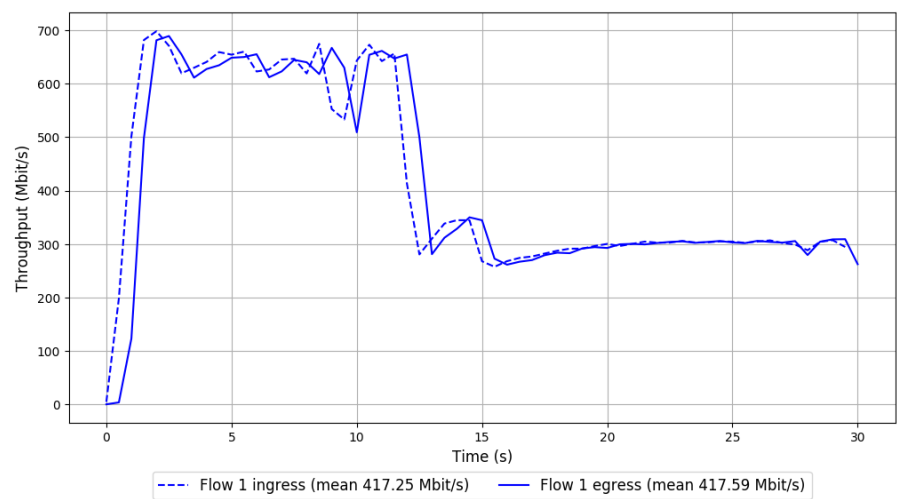• Flow 1 (95th percentile 58.28 ms)

```
Run 1: Statistics of TCP Cubic

Start at: 2018-12-01 00:09:26
End at: 2018-12-01 00:09:56
Local clock offset: -0.109 ms
Remote clock offset: -0.132 ms


# Below is generated by plot.py at 2018-12-01 02:46:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 704.84 Mbit/s
95th percentile per-packet one-way delay: 81.877 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 704.84 Mbit/s
95th percentile per-packet one-way delay: 81.877 ms
Loss rate: 0.43%
```
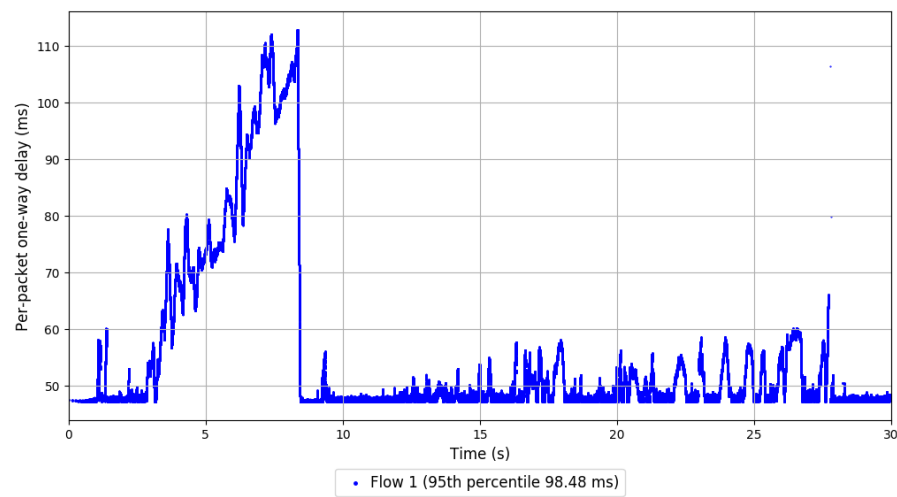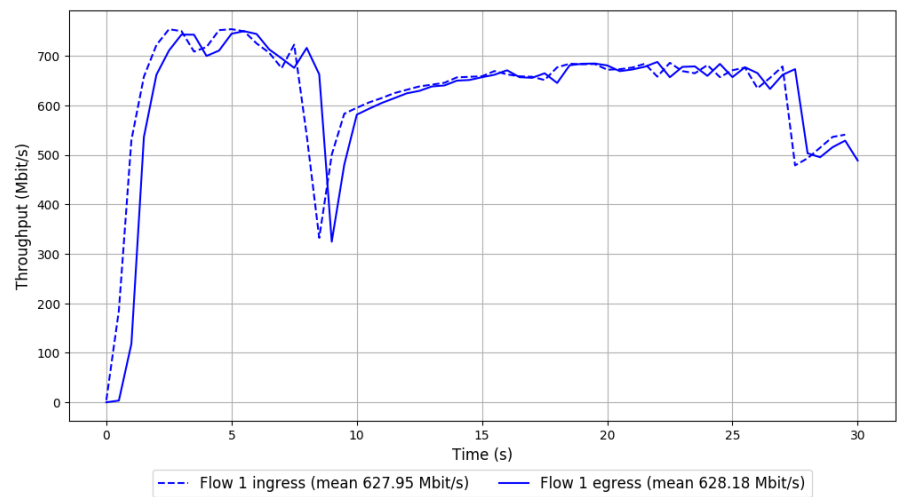
Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2018-12-01 00:37:52
End at: 2018-12-01 00:38:22
Local clock offset: -0.026 ms
Remote clock offset: -0.037 ms


# Below is generated by plot.py at 2018-12-01 02:46:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 417.59 Mbit/s
95th percentile per-packet one-way delay: 130.981 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 417.59 Mbit/s
95th percentile per-packet one-way delay: 130.981 ms
Loss rate: 0.23%
```

Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2018-12-01 01:06:00
End at: 2018-12-01 01:06:30
Local clock offset: -0.179 ms
Remote clock offset: -0.214 ms


# Below is generated by plot.py at 2018-12-01 02:46:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 628.18 Mbit/s
95th percentile per-packet one-way delay: 98.482 ms
Loss rate: 0.28%
-- Flow 1:
Average throughput: 628.18 Mbit/s
95th percentile per-packet one-way delay: 98.482 ms
Loss rate: 0.28%
```

Run 3: Report of TCP Cubic — Data Link

```
Run 4: Statistics of TCP Cubic

Start at: 2018-12-01 01:33:51
End at: 2018-12-01 01:34:21
Local clock offset: -0.072 ms
Remote clock offset: -0.1 ms


# Below is generated by plot.py at 2018-12-01 02:46:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 657.93 Mbit/s
95th percentile per-packet one-way delay: 90.253 ms
Loss rate: 0.44%
-- Flow 1:
Average throughput: 657.93 Mbit/s
95th percentile per-packet one-way delay: 90.253 ms
Loss rate: 0.44%
```
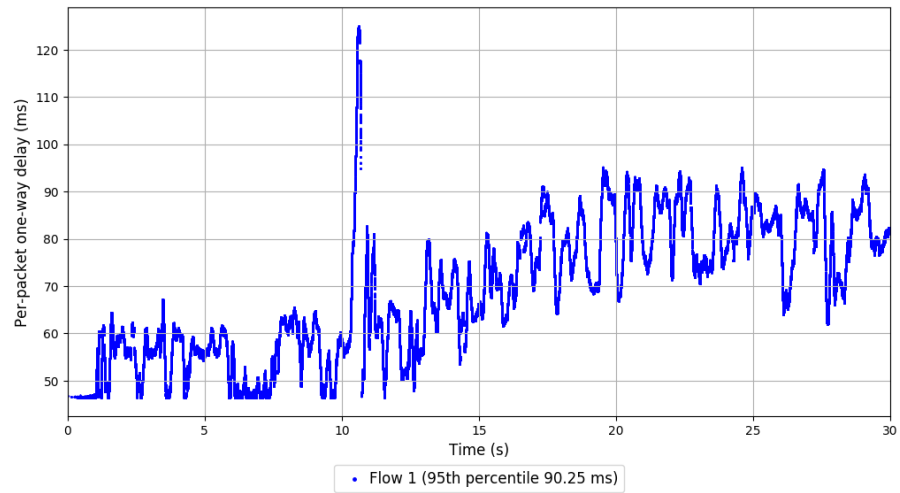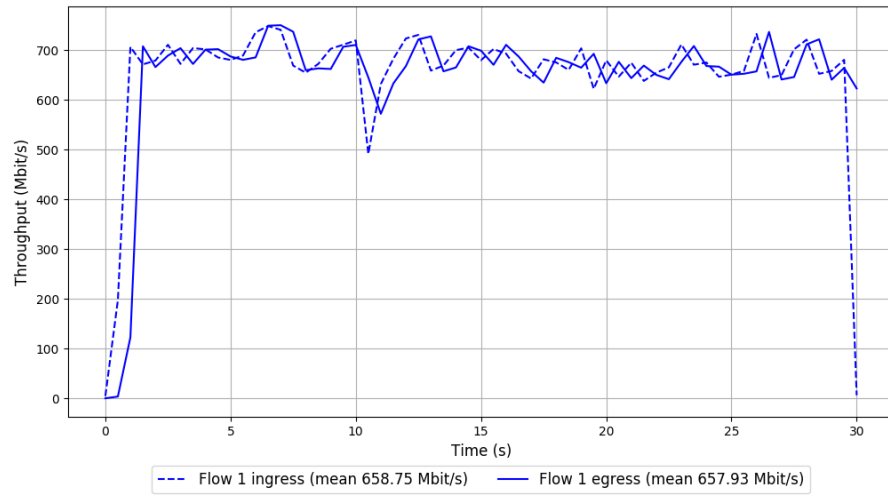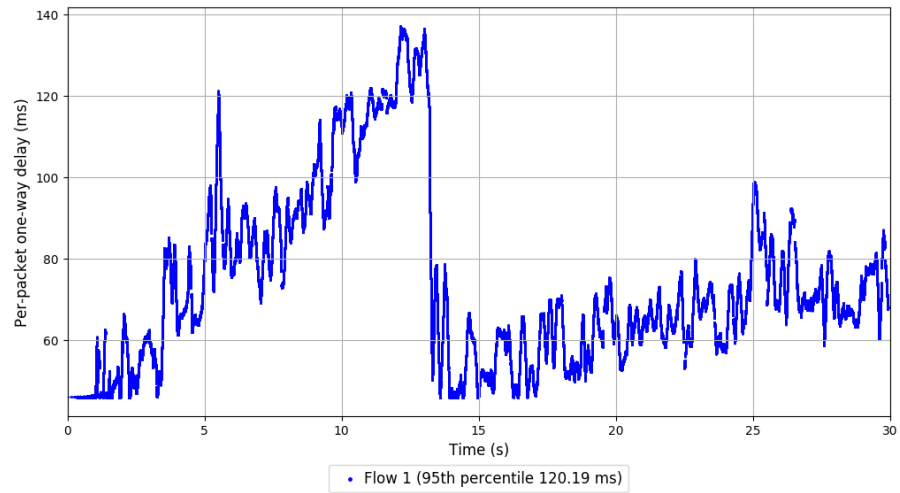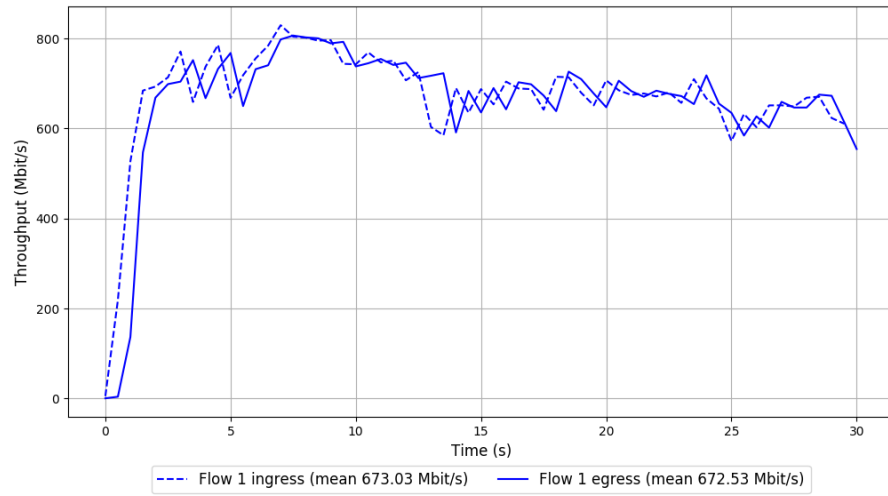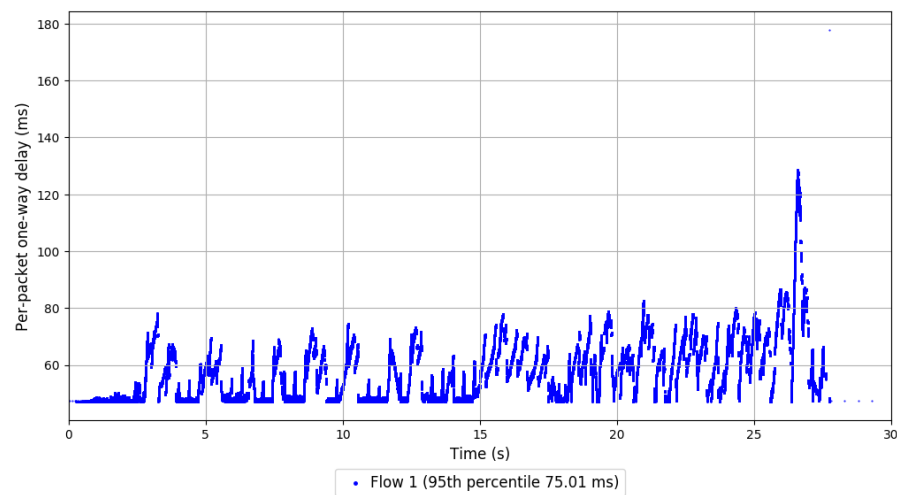
Run 4: Report of TCP Cubic — Data Link

```
Run 5: Statistics of TCP Cubic

Start at: 2018-12-01 02:01:53
End at: 2018-12-01 02:02:23
Local clock offset: -0.393 ms
Remote clock offset: -0.051 ms


# Below is generated by plot.py at 2018-12-01 02:46:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 672.53 Mbit/s
95th percentile per-packet one-way delay: 120.193 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 672.53 Mbit/s
95th percentile per-packet one-way delay: 120.193 ms
Loss rate: 0.38%
```

Run 5: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 673.03 Mbit/s)   Flow 1 egress (mean 672.53 Mbit/s)
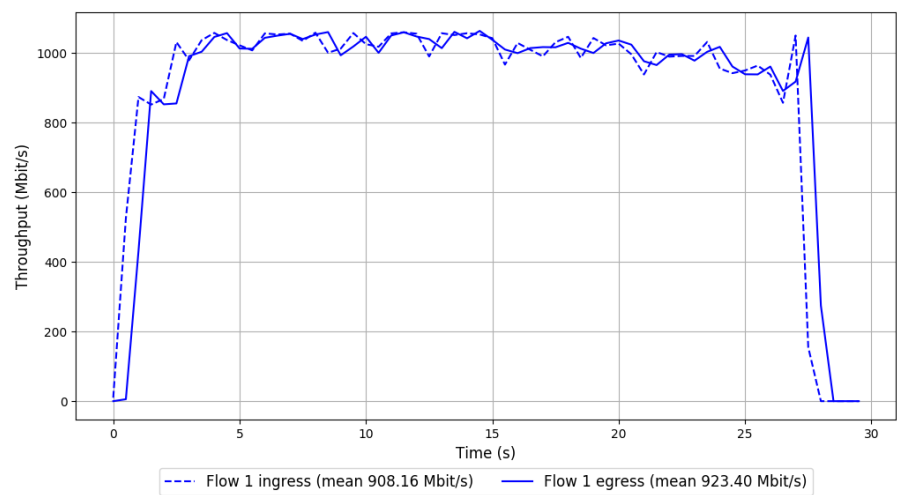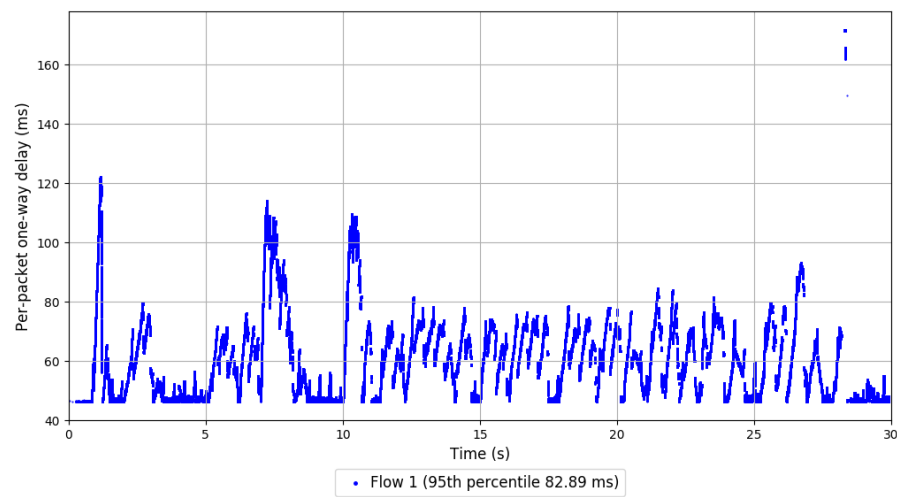

• Flow 1 (95th percentile 120.19 ms)

```
Run 1: Statistics of FillP

Start at: 2018-12-01 00:02:40
End at: 2018-12-01 00:03:10
Local clock offset: -0.117 ms
Remote clock offset: -0.152 ms


# Below is generated by plot.py at 2018-12-01 02:52:39
# Datalink statistics
-- Total of 1 flow:
Average throughput: 923.40 Mbit/s
95th percentile per-packet one-way delay: 75.011 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 923.40 Mbit/s
95th percentile per-packet one-way delay: 75.011 ms
Loss rate: 0.03%
```
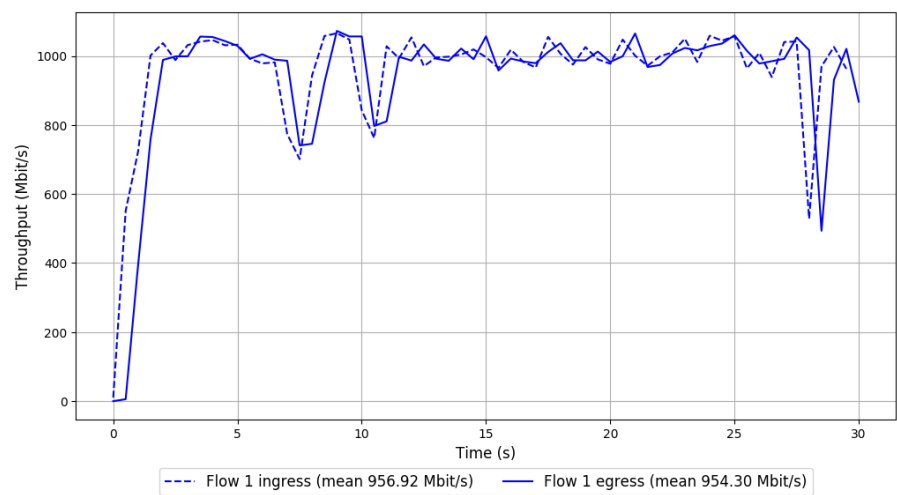
Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2018-12-01 00:30:53
End at: 2018-12-01 00:31:23
Local clock offset: -0.042 ms
Remote clock offset: -0.041 ms


# Below is generated by plot.py at 2018-12-01 03:04:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 954.30 Mbit/s
95th percentile per-packet one-way delay: 82.893 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 954.30 Mbit/s
95th percentile per-packet one-way delay: 82.893 ms
Loss rate: 0.59%
```

Run 2: Report of FillP — Data Link

```
Run 3: Statistics of FillP

Start at: 2018-12-01 00:59:13
End at: 2018-12-01 00:59:43
Local clock offset: -0.138 ms
Remote clock offset: -0.11 ms

# Below is generated by plot.py at 2018-12-01 03:06:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 917.12 Mbit/s
95th percentile per-packet one-way delay: 97.438 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 917.12 Mbit/s
95th percentile per-packet one-way delay: 97.438 ms
Loss rate: 0.69%
```
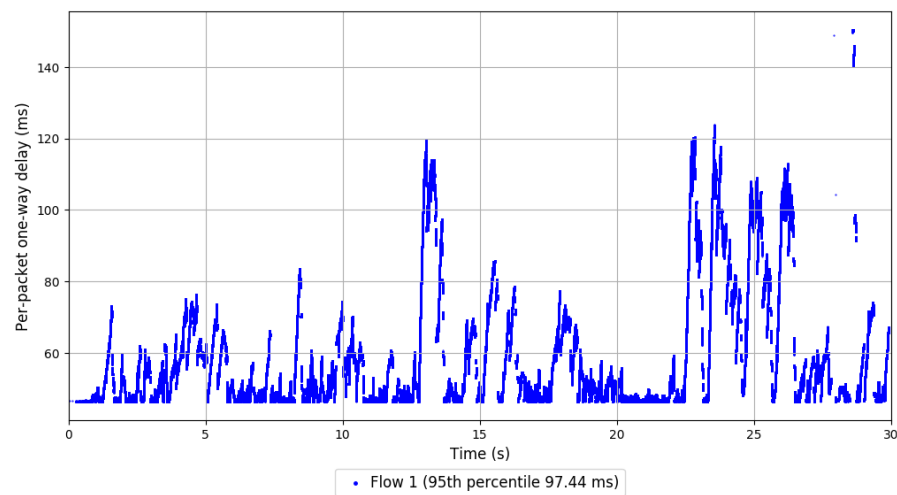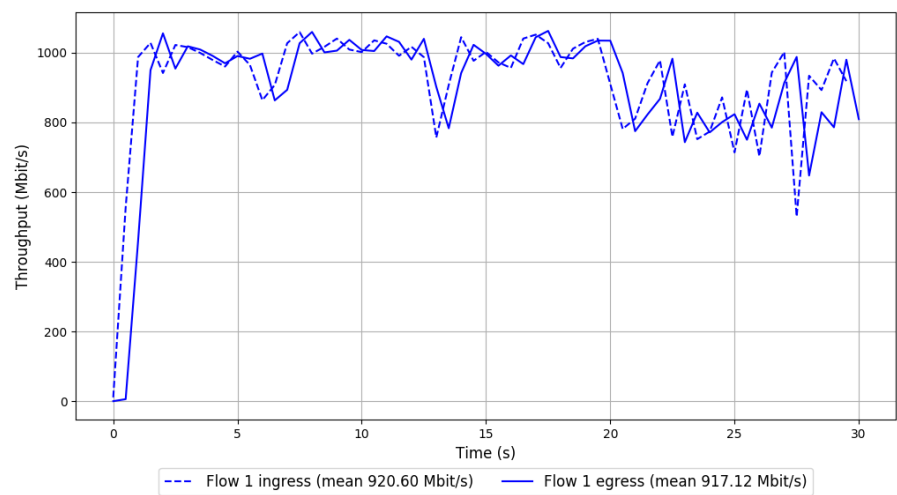
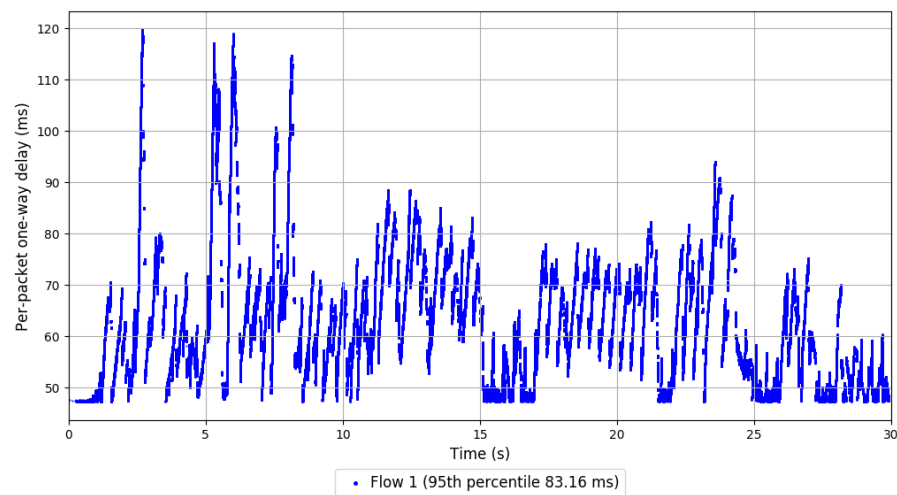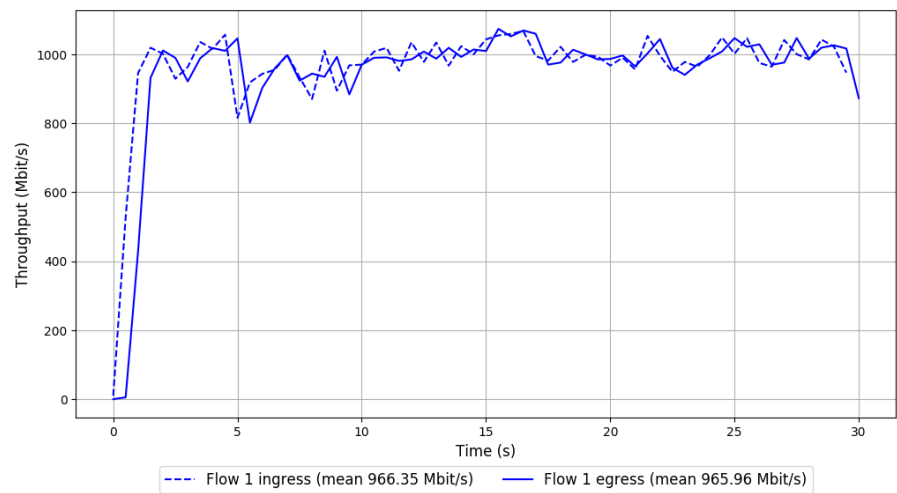Run 3: Report of FillP — Data Link

```
Run 4: Statistics of FillP

Start at: 2018-12-01 01:27:07
End at: 2018-12-01 01:27:37
Local clock offset: 0.203 ms
Remote clock offset: -0.086 ms


# Below is generated by plot.py at 2018-12-01 03:07:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 965.96 Mbit/s
95th percentile per-packet one-way delay: 83.159 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 965.96 Mbit/s
95th percentile per-packet one-way delay: 83.159 ms
Loss rate: 0.36%
```

Run 4: Report of FillP — Data Link

```
Run 5: Statistics of FillP

Start at: 2018-12-01 01:55:04
End at: 2018-12-01 01:55:34
Local clock offset: -0.037 ms
Remote clock offset: 0.005 ms


# Below is generated by plot.py at 2018-12-01 03:08:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 993.11 Mbit/s
95th percentile per-packet one-way delay: 73.362 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 993.11 Mbit/s
95th percentile per-packet one-way delay: 73.362 ms
Loss rate: 0.38%
```
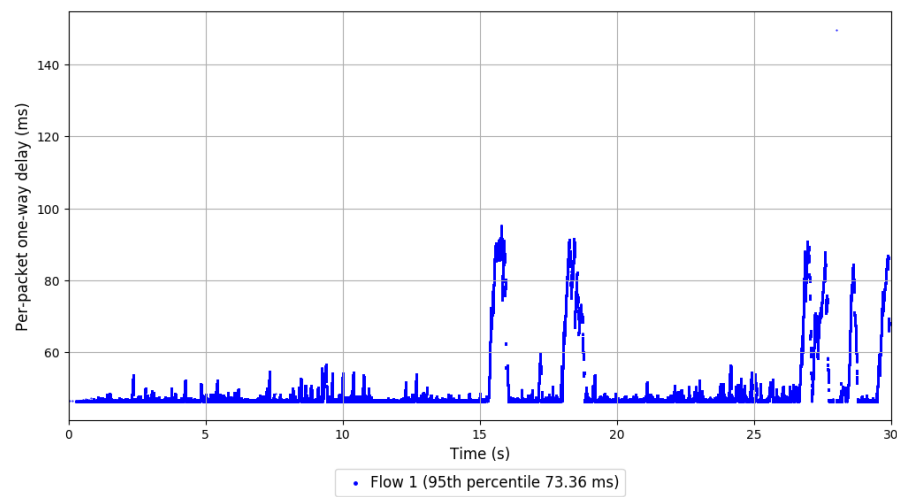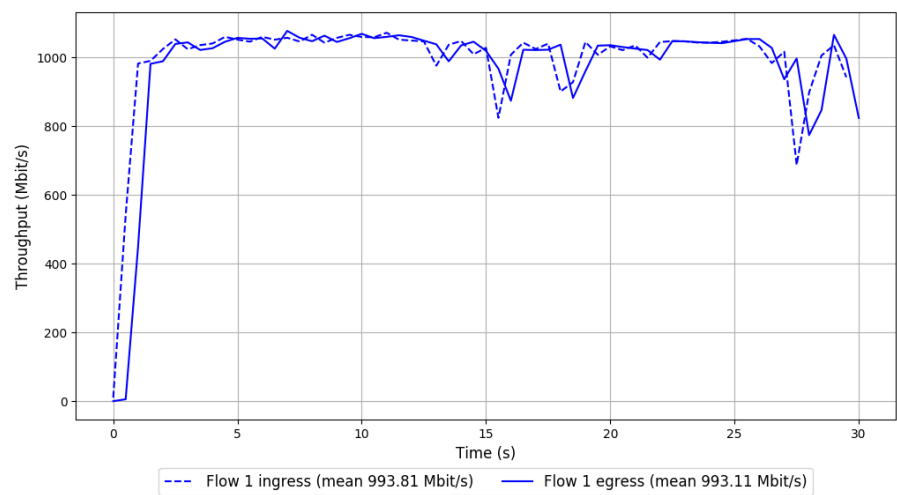
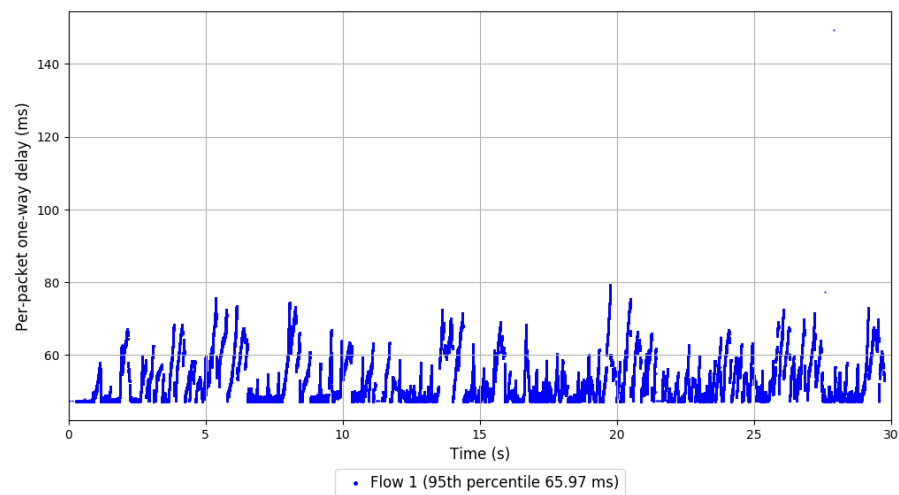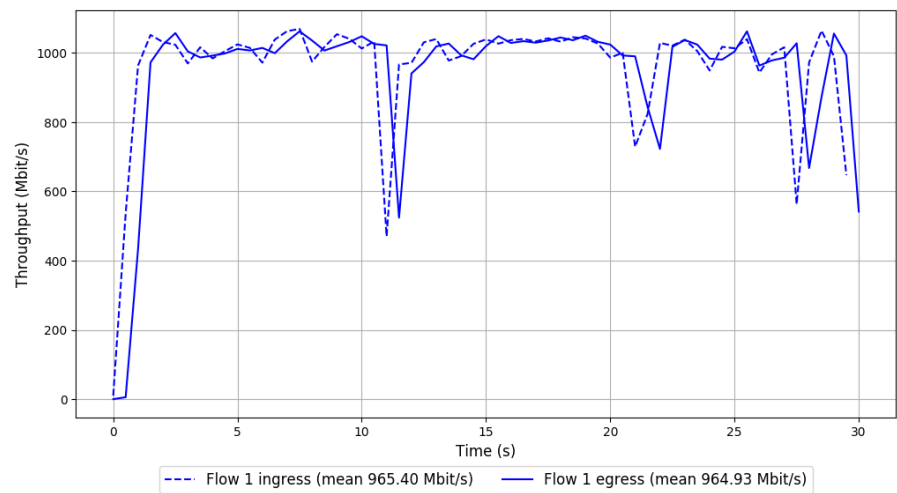Run 5: Report of FillP — Data Link

```
Run 1: Statistics of FillP-Sheep

Start at: 2018-12-01 00:00:53
End at: 2018-12-01 00:01:23
Local clock offset: -0.083 ms
Remote clock offset: -0.164 ms


# Below is generated by plot.py at 2018-12-01 03:08:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 964.93 Mbit/s
95th percentile per-packet one-way delay: 65.969 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 964.93 Mbit/s
95th percentile per-packet one-way delay: 65.969 ms
Loss rate: 0.37%
```

Run 1: Report of FillP-Sheep — Data Link

```
Run 2: Statistics of FillP-Sheep

Start at: 2018-12-01 00:29:05
End at: 2018-12-01 00:29:35
Local clock offset: 0.322 ms
Remote clock offset: -0.07 ms


# Below is generated by plot.py at 2018-12-01 03:08:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 950.04 Mbit/s
95th percentile per-packet one-way delay: 70.858 ms
Loss rate: 0.22%
-- Flow 1:
Average throughput: 950.04 Mbit/s
95th percentile per-packet one-way delay: 70.858 ms
Loss rate: 0.22%
```
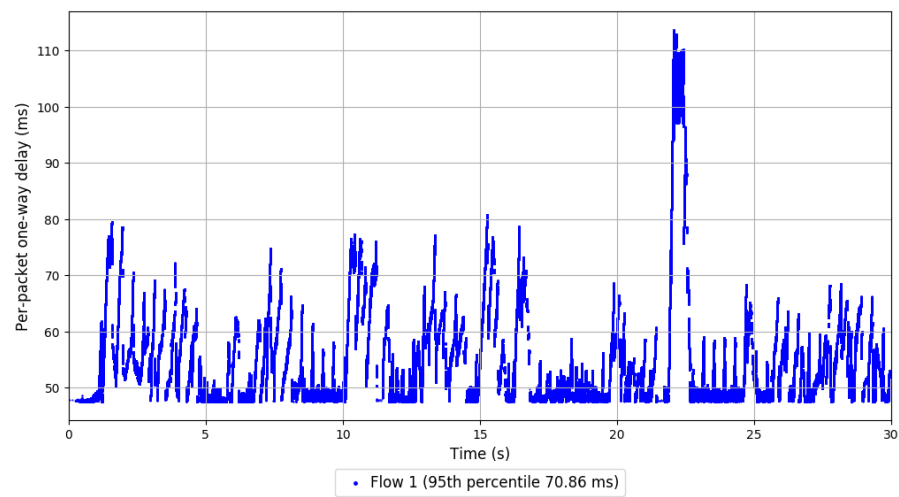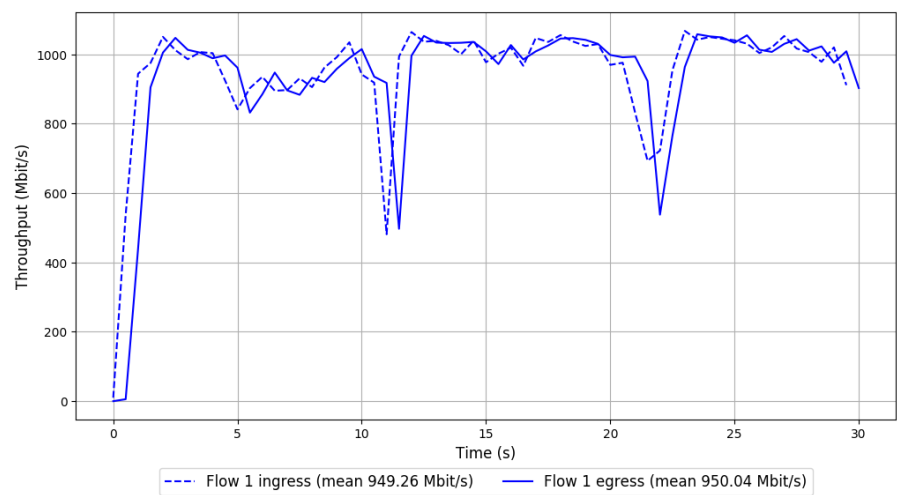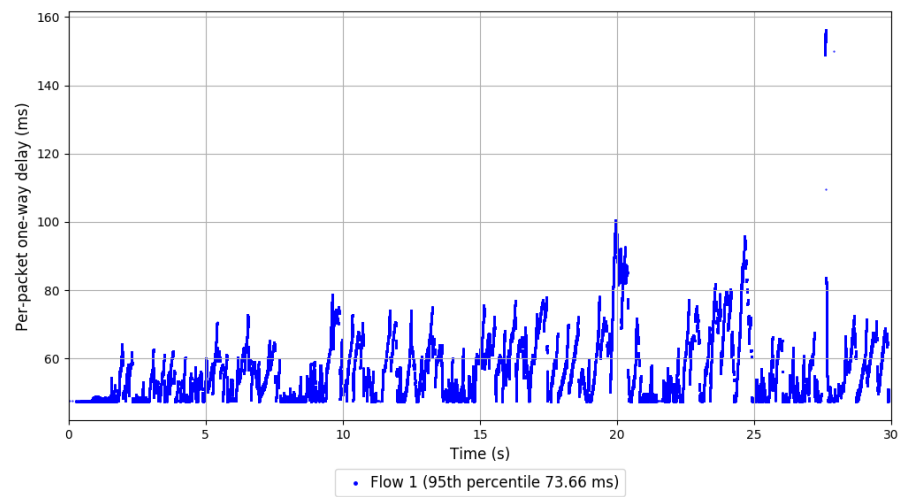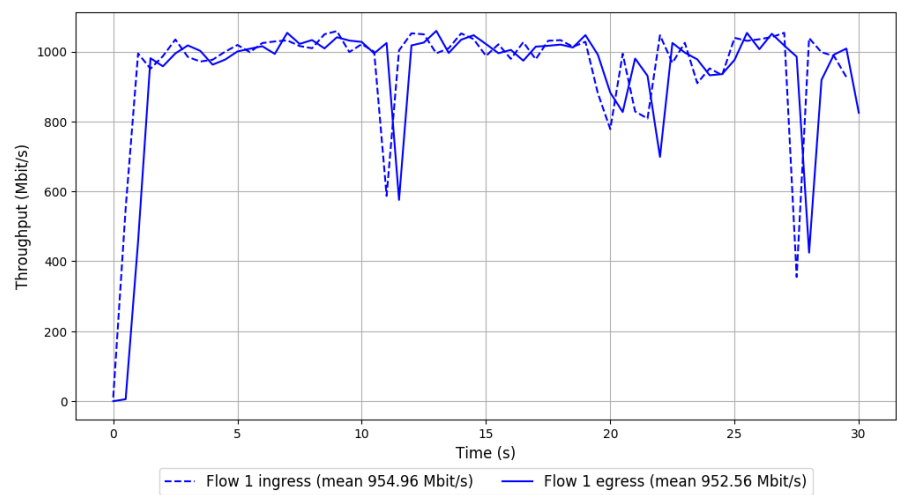
Run 2: Report of FillP-Sheep — Data Link

```
Run 3: Statistics of FillP-Sheep

Start at: 2018-12-01 00:57:29
End at: 2018-12-01 00:57:59
Local clock offset: -0.151 ms
Remote clock offset: -0.105 ms


# Below is generated by plot.py at 2018-12-01 03:08:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 952.56 Mbit/s
95th percentile per-packet one-way delay: 73.660 ms
Loss rate: 0.57%
-- Flow 1:
Average throughput: 952.56 Mbit/s
95th percentile per-packet one-way delay: 73.660 ms
Loss rate: 0.57%
```

Run 3: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 954.96 Mbit/s) ----- Flow 1 egress (mean 952.56 Mbit/s) ———
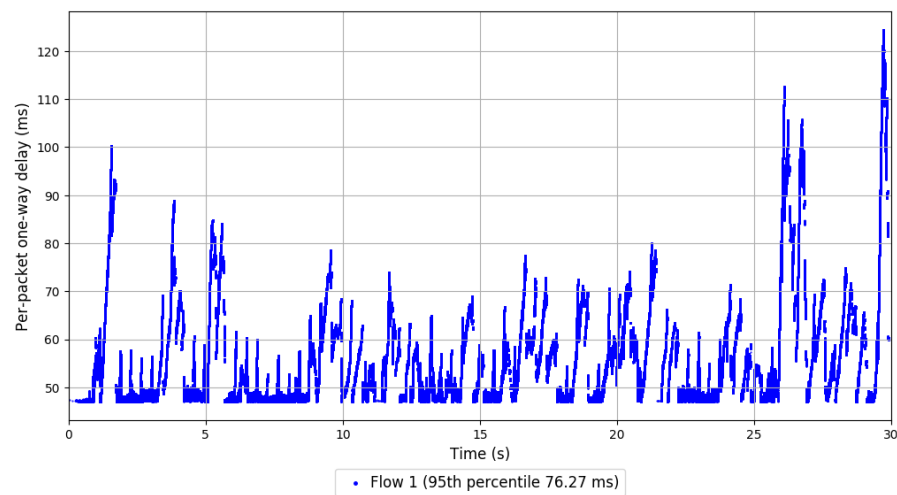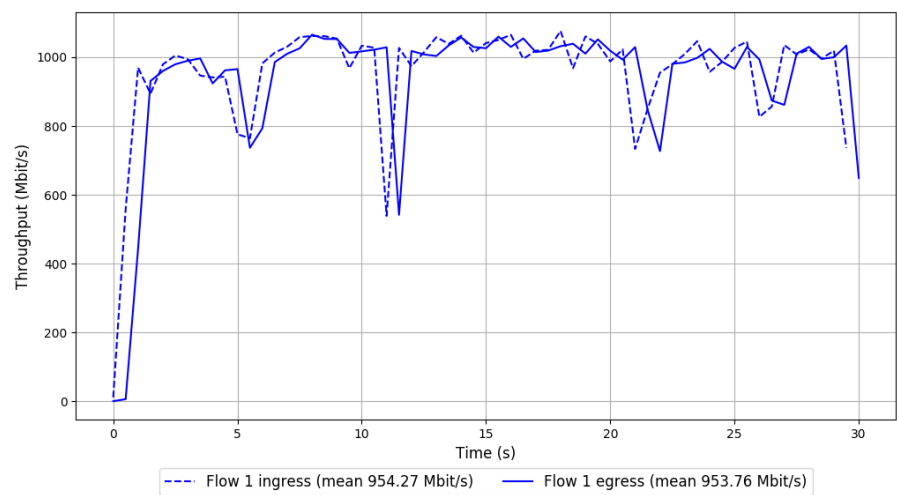

Flow 1 (95th percentile 73.66 ms)

```
Run 4: Statistics of FillP-Sheep

Start at: 2018-12-01 01:25:21
End at: 2018-12-01 01:25:51
Local clock offset: -0.178 ms
Remote clock offset: -0.136 ms


# Below is generated by plot.py at 2018-12-01 03:16:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 953.76 Mbit/s
95th percentile per-packet one-way delay: 76.268 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 953.76 Mbit/s
95th percentile per-packet one-way delay: 76.268 ms
Loss rate: 0.37%
```

Run 4: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 954.27 Mbit/s) ----- Flow 1 egress (mean 953.76 Mbit/s) ——
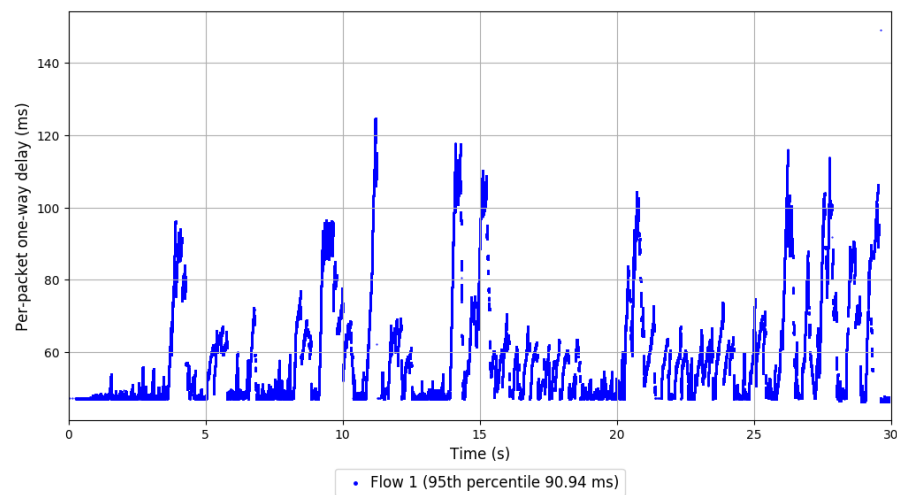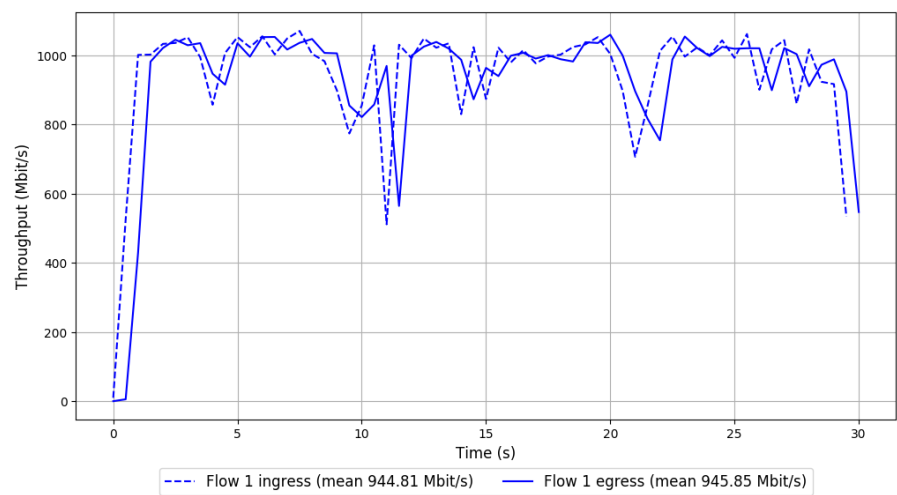

• Flow 1 (95th percentile 76.27 ms)

```
Run 5: Statistics of FillP-Sheep

Start at: 2018-12-01 01:53:20
End at: 2018-12-01 01:53:50
Local clock offset: -0.096 ms
Remote clock offset: -0.054 ms


# Below is generated by plot.py at 2018-12-01 03:23:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 945.85 Mbit/s
95th percentile per-packet one-way delay: 90.945 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 945.85 Mbit/s
95th percentile per-packet one-way delay: 90.945 ms
Loss rate: 0.21%
```

Run 5: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 944.81 Mbit/s)   Flow 1 egress (mean 945.85 Mbit/s)

Flow 1 (95th percentile 90.94 ms)
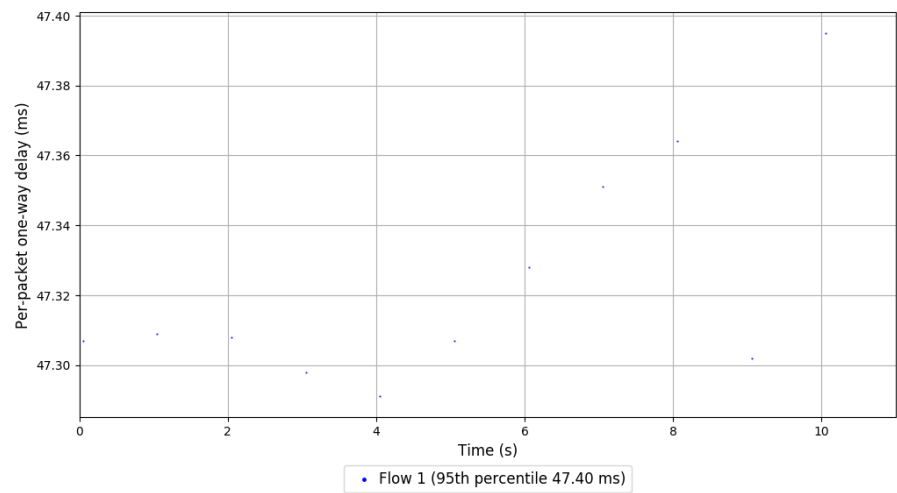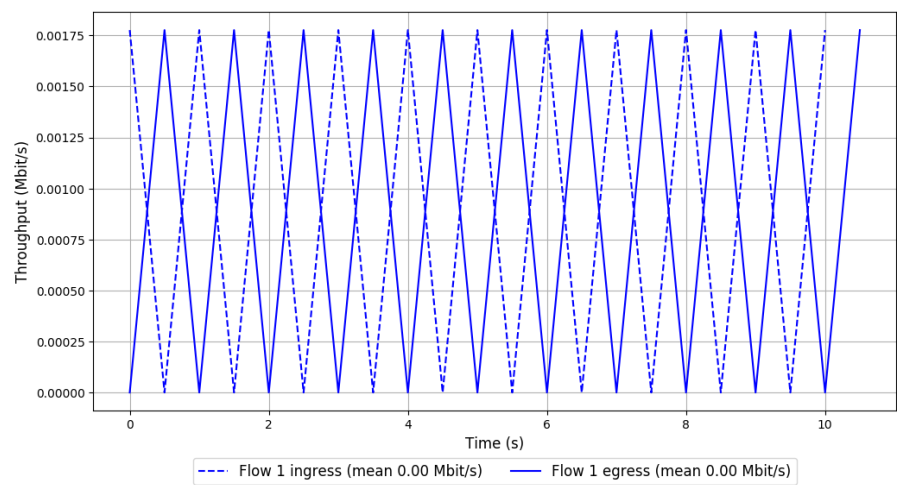
```
Run 1: Statistics of Indigo

Start at: 2018-11-30 23:54:56
End at: 2018-11-30 23:55:26
Local clock offset: -0.157 ms
Remote clock offset: -0.156 ms
```

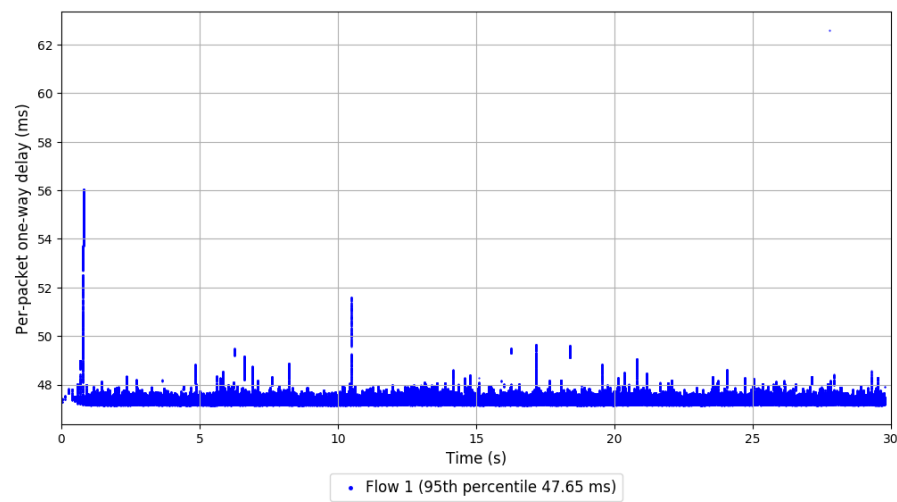Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-12-01 00:22:35
End at: 2018-12-01 00:23:05
Local clock offset: -0.077 ms
Remote clock offset: -0.054 ms


# Below is generated by plot.py at 2018-12-01 03:23:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 235.94 Mbit/s
95th percentile per-packet one-way delay: 47.647 ms
Loss rate: 0.31%
-- Flow 1:
Average throughput: 235.94 Mbit/s
95th percentile per-packet one-way delay: 47.647 ms
Loss rate: 0.31%
```
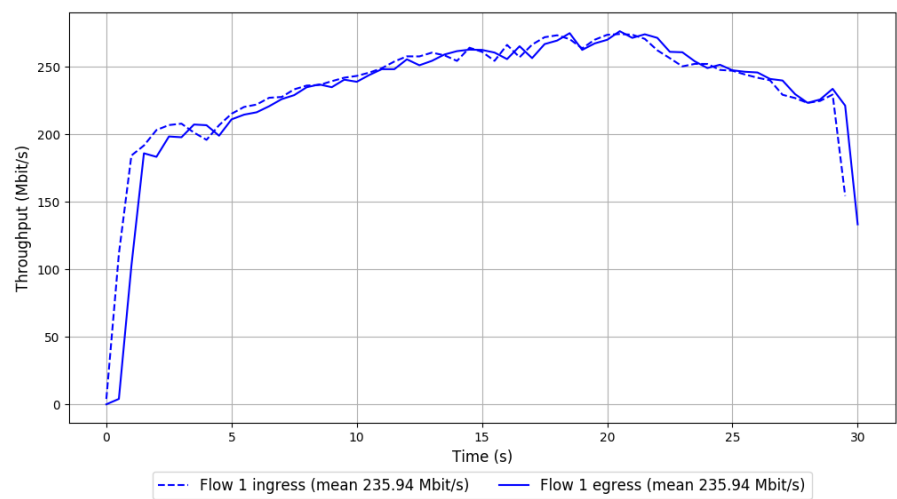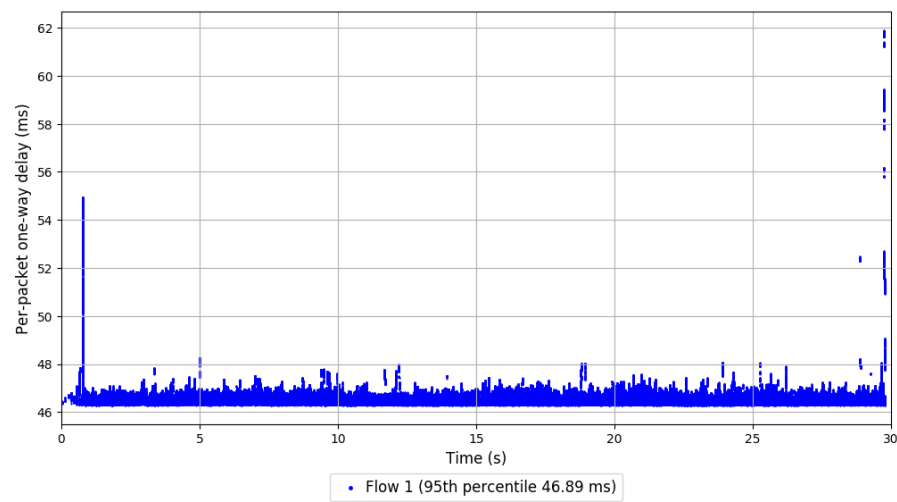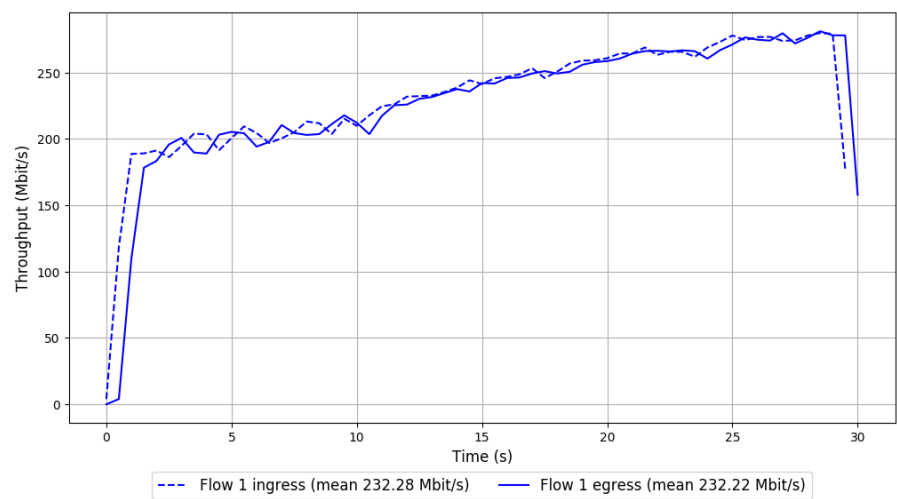
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-12-01 00:51:12
End at: 2018-12-01 00:51:42
Local clock offset: -0.048 ms
Remote clock offset: -0.027 ms


# Below is generated by plot.py at 2018-12-01 03:23:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 232.22 Mbit/s
95th percentile per-packet one-way delay: 46.887 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 232.22 Mbit/s
95th percentile per-packet one-way delay: 46.887 ms
Loss rate: 0.34%
```
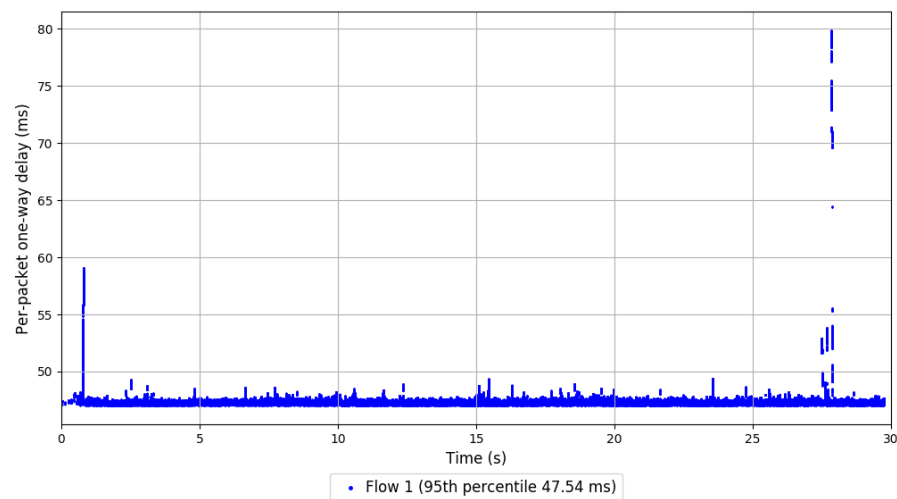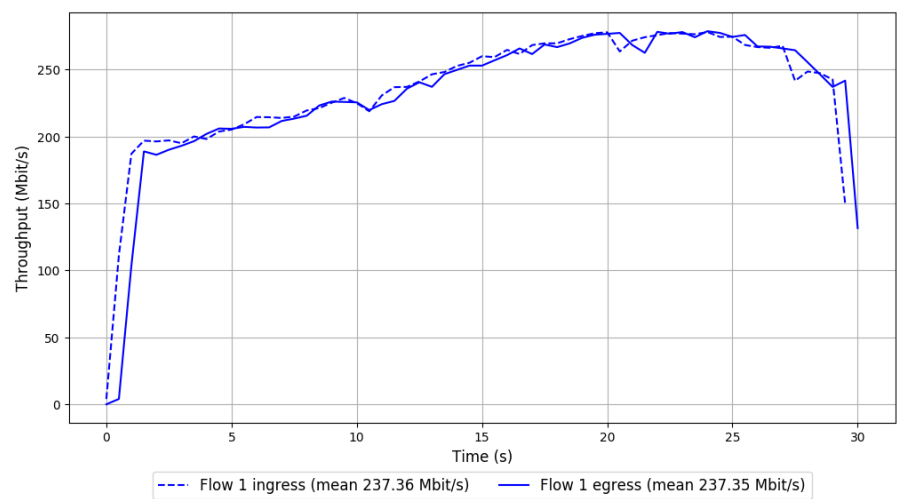
Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2018-12-01 01:19:04
End at: 2018-12-01 01:19:34
Local clock offset: -0.178 ms
Remote clock offset: -0.123 ms


# Below is generated by plot.py at 2018-12-01 03:23:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 237.35 Mbit/s
95th percentile per-packet one-way delay: 47.536 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 237.35 Mbit/s
95th percentile per-packet one-way delay: 47.536 ms
Loss rate: 0.33%
```
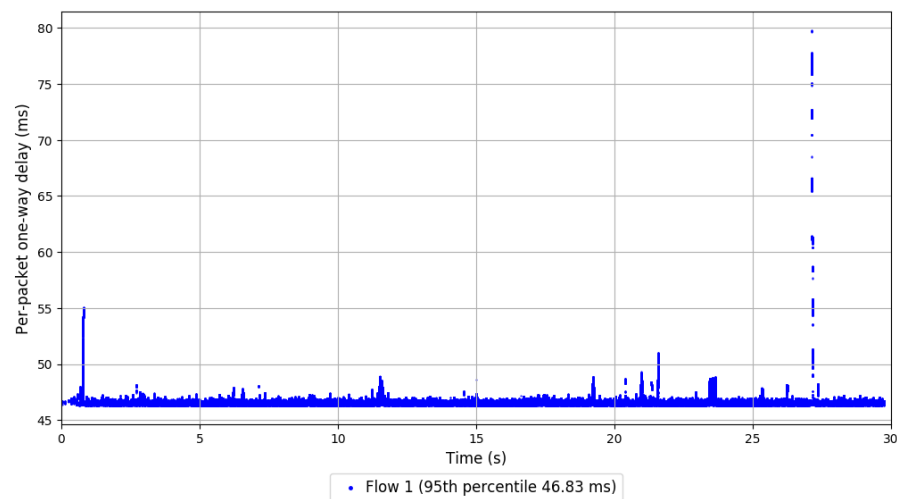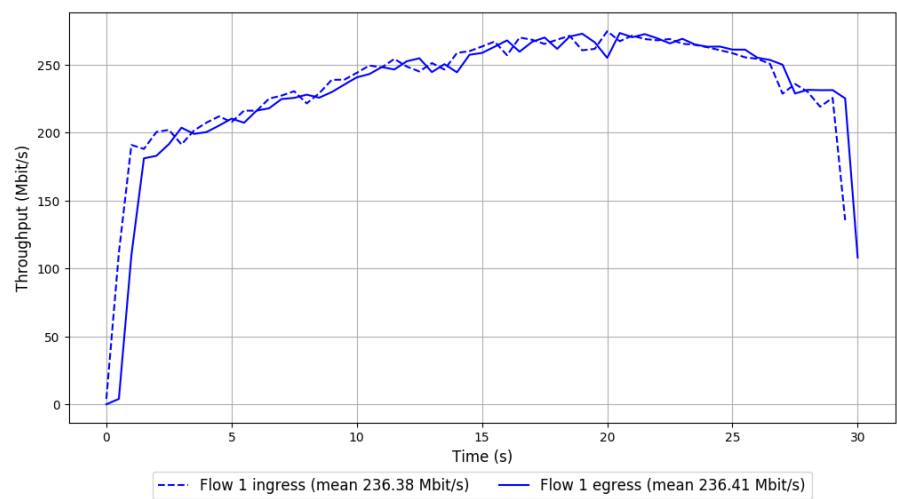
Run 4: Report of Indigo — Data Link

```
Run 5: Statistics of Indigo

Start at: 2018-12-01 01:47:03
End at: 2018-12-01 01:47:33
Local clock offset: -0.067 ms
Remote clock offset: -0.057 ms


# Below is generated by plot.py at 2018-12-01 03:23:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 236.41 Mbit/s
95th percentile per-packet one-way delay: 46.829 ms
Loss rate: 0.30%
-- Flow 1:
Average throughput: 236.41 Mbit/s
95th percentile per-packet one-way delay: 46.829 ms
Loss rate: 0.30%
```

Run 5: Report of Indigo — Data Link

Flow 1 ingress (mean 236.38 Mbit/s)   Flow 1 egress (mean 236.41 Mbit/s)
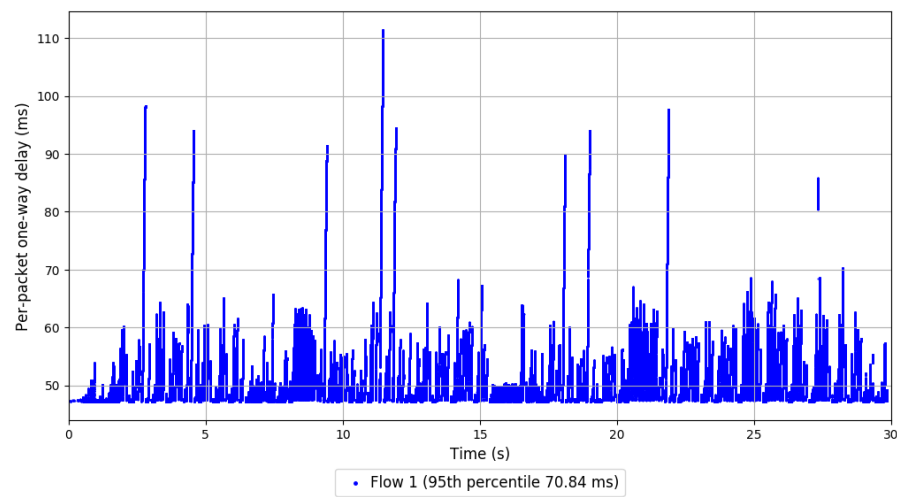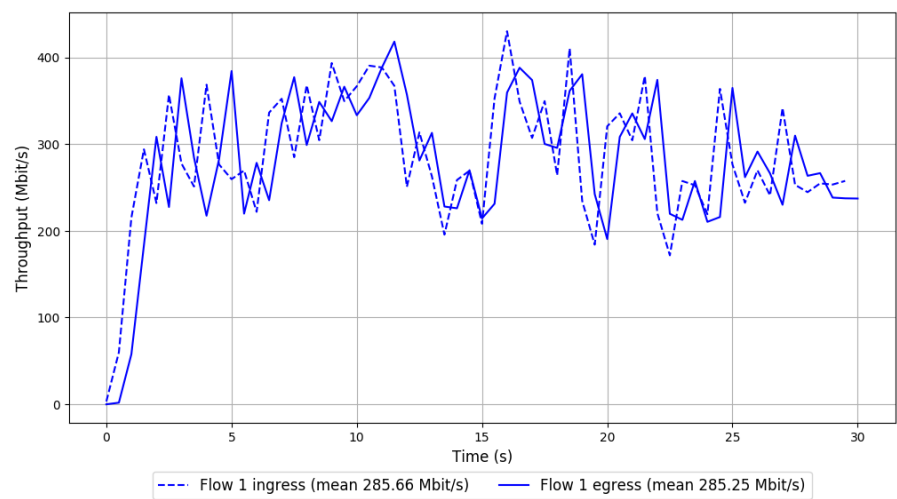

Flow 1 (95th percentile 46.83 ms)

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

Start at: 2018-12-01 00:14:17
End at: 2018-12-01 00:14:47
Local clock offset: -0.092 ms
Remote clock offset: -0.152 ms


# Below is generated by plot.py at 2018-12-01 03:23:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 285.25 Mbit/s
95th percentile per-packet one-way delay: 70.844 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 285.25 Mbit/s
95th percentile per-packet one-way delay: 70.844 ms
Loss rate: 0.39%
```

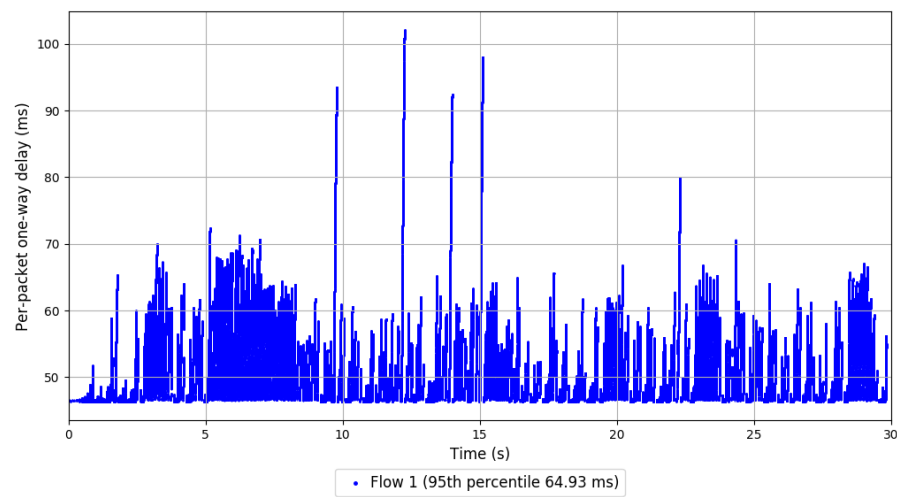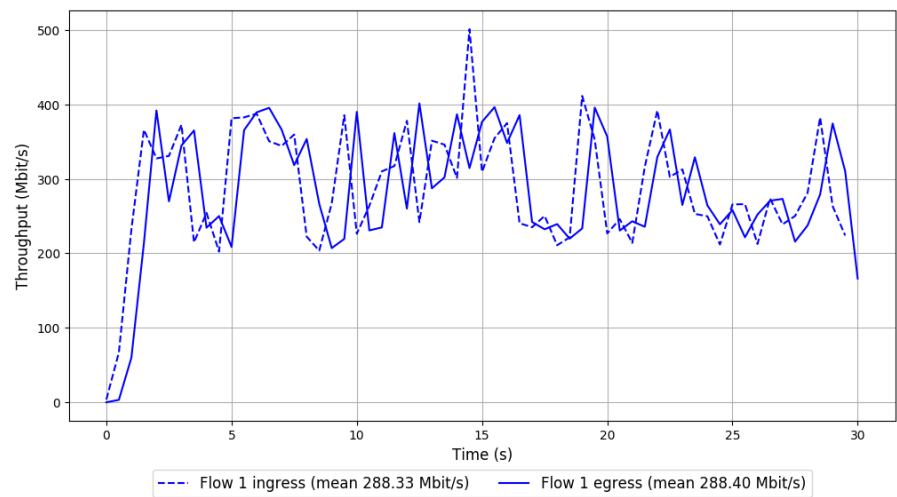Run 1: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-12-01 00:42:41
End at: 2018-12-01 00:43:11
Local clock offset: -0.044 ms
Remote clock offset: -0.042 ms


# Below is generated by plot.py at 2018-12-01 03:23:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 288.40 Mbit/s
95th percentile per-packet one-way delay: 64.927 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 288.40 Mbit/s
95th percentile per-packet one-way delay: 64.927 ms
Loss rate: 0.34%
```

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

Flow 1 ingress (mean 288.33 Mbit/s) —— Flow 1 egress (mean 288.40 Mbit/s)
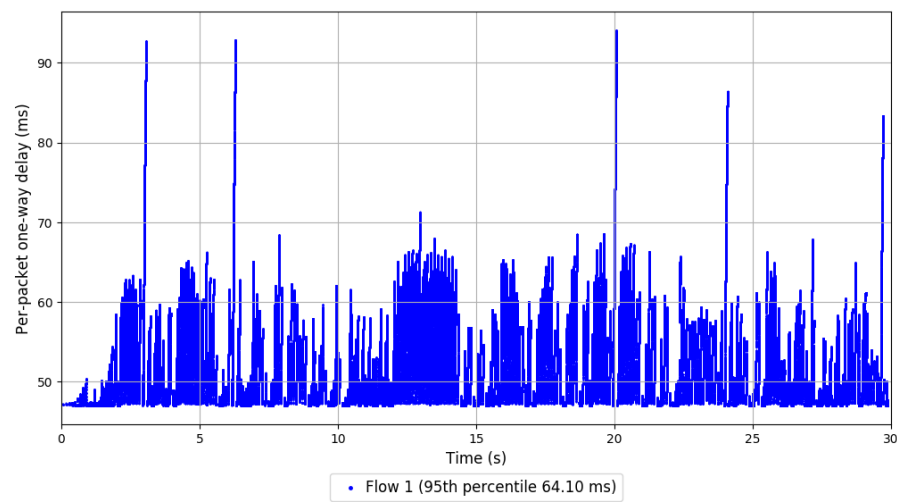
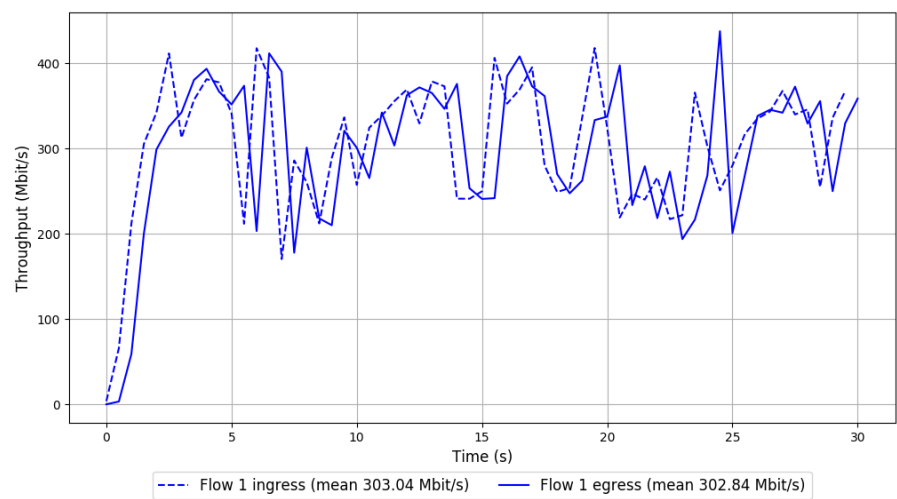

• Flow 1 (95th percentile 64.93 ms)

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

Start at: 2018-12-01 01:10:46
End at: 2018-12-01 01:11:16
Local clock offset: -0.203 ms
Remote clock offset: -0.127 ms


# Below is generated by plot.py at 2018-12-01 03:23:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 302.84 Mbit/s
95th percentile per-packet one-way delay: 64.100 ms
Loss rate: 0.29%
-- Flow 1:
Average throughput: 302.84 Mbit/s
95th percentile per-packet one-way delay: 64.100 ms
Loss rate: 0.29%
```

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

- - - - Flow 1 ingress (mean 303.04 Mbit/s)   ——— Flow 1 egress (mean 302.84 Mbit/s)

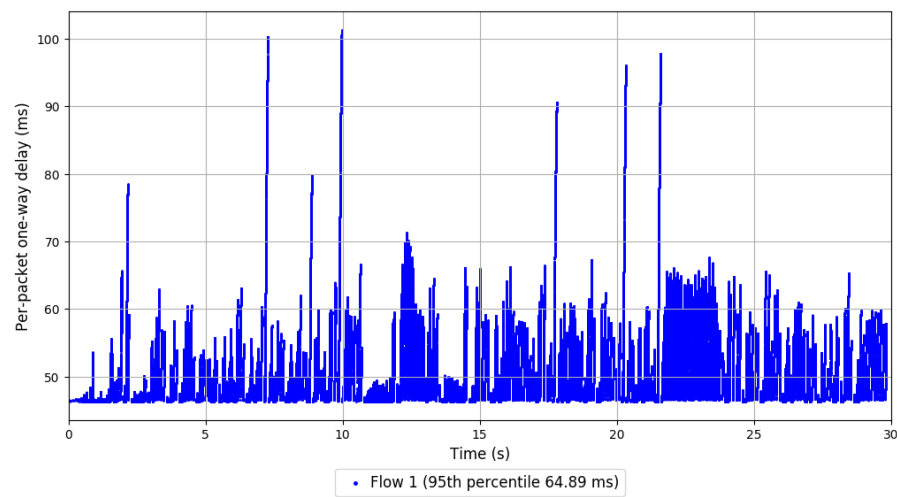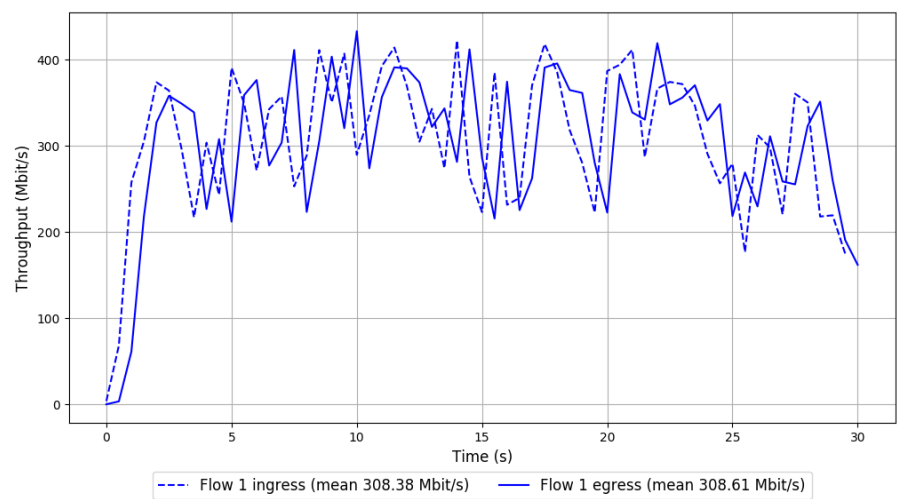• Flow 1 (95th percentile 64.10 ms)

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

Start at: 2018-12-01 01:38:41
End at: 2018-12-01 01:39:11
Local clock offset: -0.072 ms
Remote clock offset: -0.073 ms


# Below is generated by plot.py at 2018-12-01 03:23:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 308.61 Mbit/s
95th percentile per-packet one-way delay: 64.891 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 308.61 Mbit/s
95th percentile per-packet one-way delay: 64.891 ms
Loss rate: 0.23%
```

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

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

Start at: 2018-12-01 02:06:54
End at: 2018-12-01 02:07:24
Local clock offset: -0.416 ms
Remote clock offset: -0.08 ms

# Below is generated by plot.py at 2018-12-01 03:23:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 297.86 Mbit/s
95th percentile per-packet one-way delay: 63.379 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 297.86 Mbit/s
95th percentile per-packet one-way delay: 63.379 ms
Loss rate: 0.39%
```
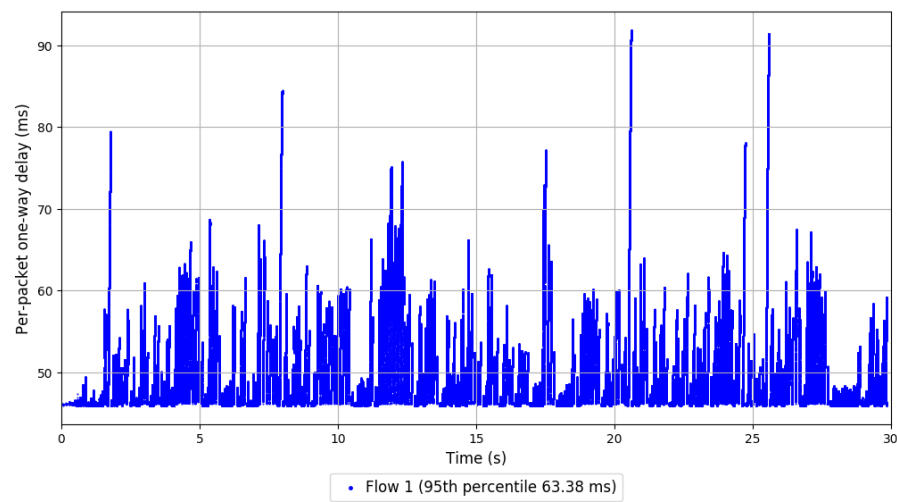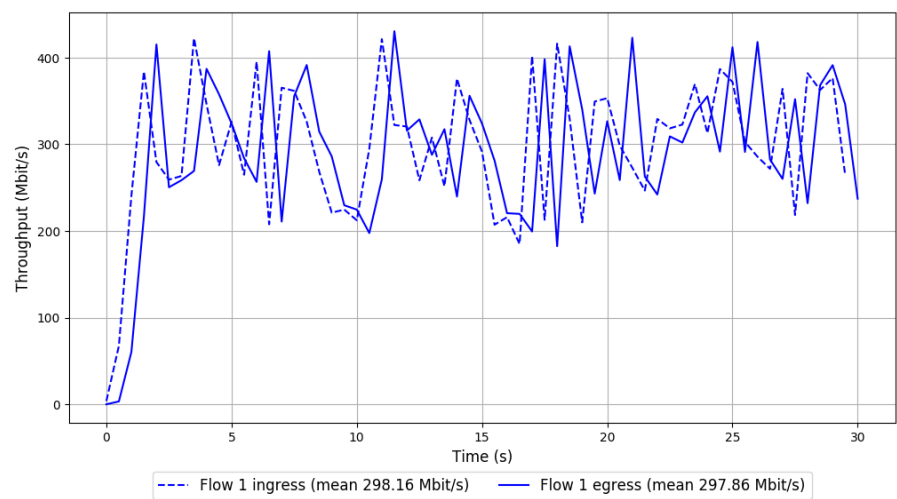
Run 5: Report of Indigo-96d2da3 — Data Link

Flow 1 ingress (mean 298.16 Mbit/s) ----- Flow 1 egress (mean 297.86 Mbit/s)
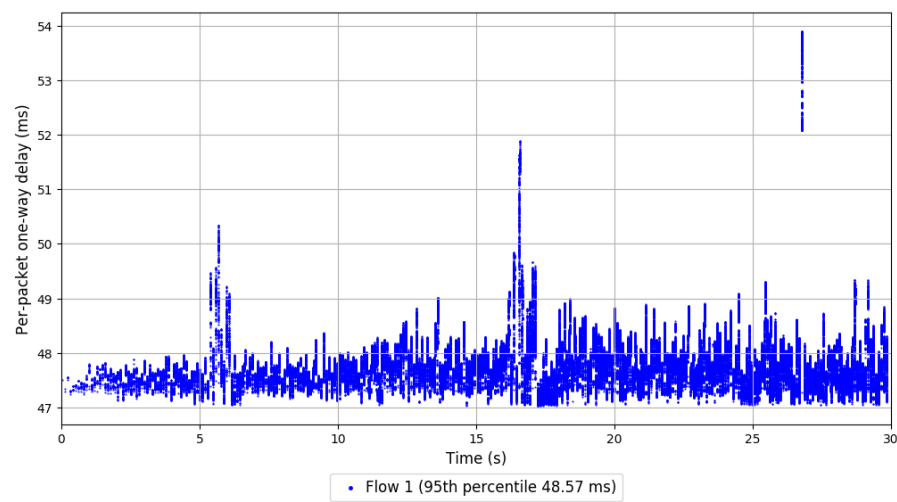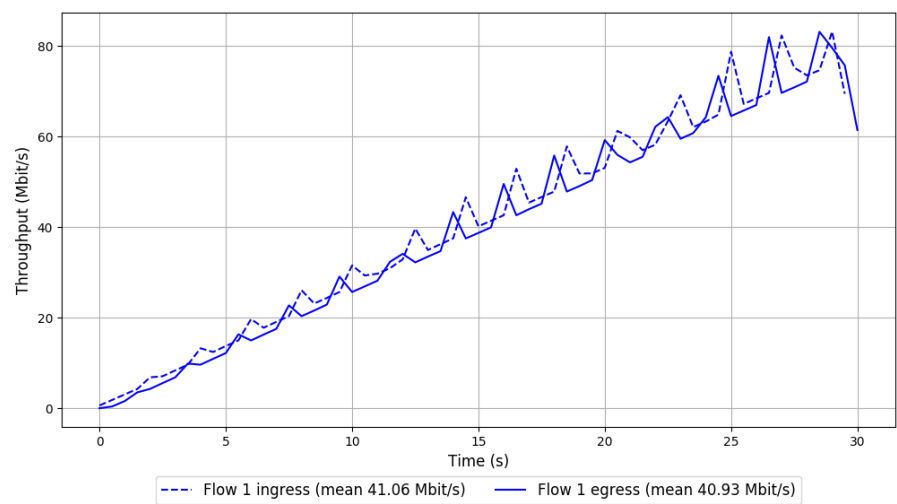

Flow 1 (95th percentile 63.38 ms)

```
Run 1: Statistics of LEDBAT

Start at: 2018-12-01 00:04:22
End at: 2018-12-01 00:04:52
Local clock offset: -0.122 ms
Remote clock offset: -0.124 ms


# Below is generated by plot.py at 2018-12-01 03:23:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 40.93 Mbit/s
95th percentile per-packet one-way delay: 48.572 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 40.93 Mbit/s
95th percentile per-packet one-way delay: 48.572 ms
Loss rate: 0.63%
```

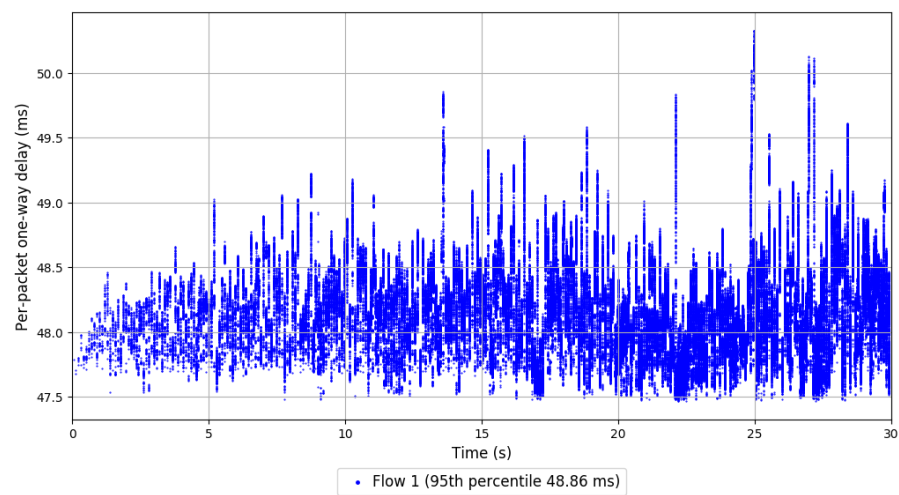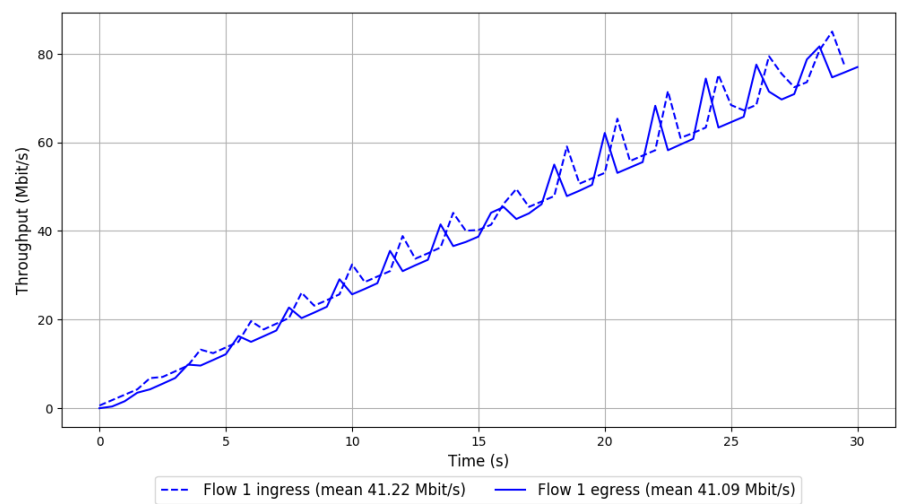Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-12-01 00:32:38
End at: 2018-12-01 00:33:08
Local clock offset: 0.307 ms
Remote clock offset: -0.039 ms

# Below is generated by plot.py at 2018-12-01 03:23:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 41.09 Mbit/s
95th percentile per-packet one-way delay: 48.858 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 41.09 Mbit/s
95th percentile per-packet one-way delay: 48.858 ms
Loss rate: 0.63%
```
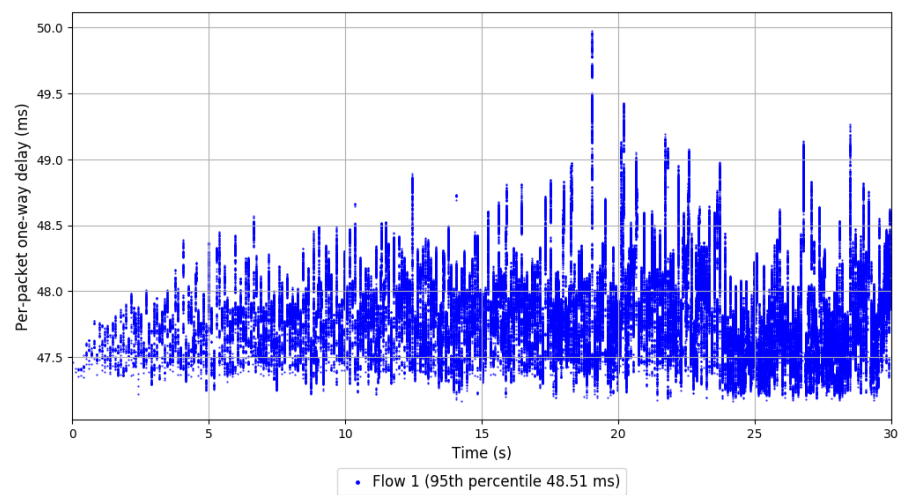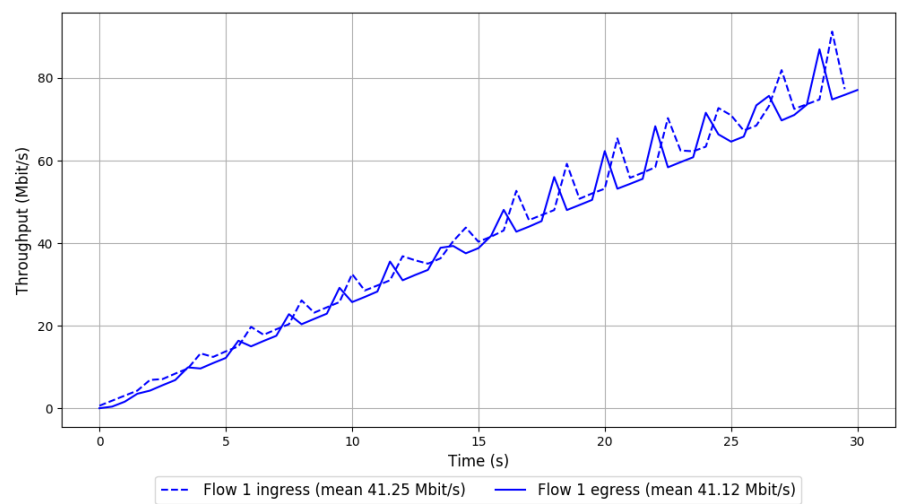
Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-12-01 01:00:58
End at: 2018-12-01 01:01:28
Local clock offset: -0.131 ms
Remote clock offset: -0.126 ms

# Below is generated by plot.py at 2018-12-01 03:23:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 41.12 Mbit/s
95th percentile per-packet one-way delay: 48.507 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 41.12 Mbit/s
95th percentile per-packet one-way delay: 48.507 ms
Loss rate: 0.63%
```

Run 3: Report of LEDBAT — Data Link

Flow 1 ingress (mean 41.25 Mbit/s)   Flow 1 egress (mean 41.12 Mbit/s)
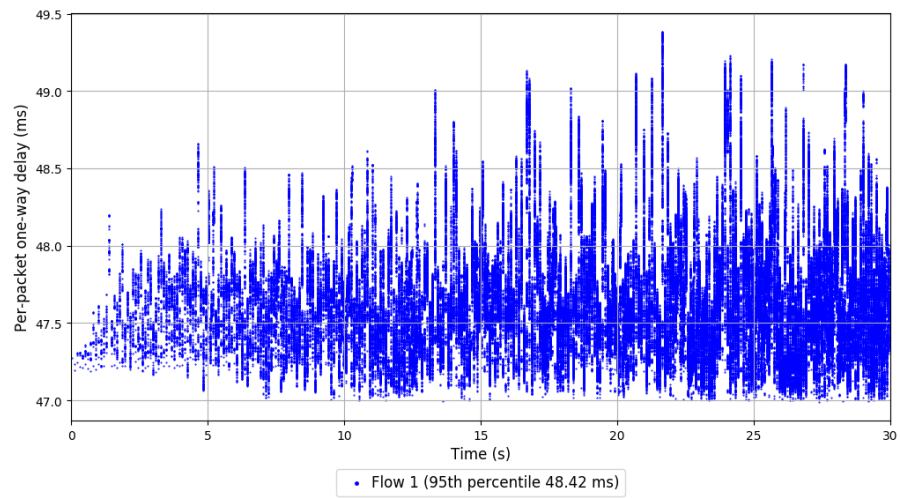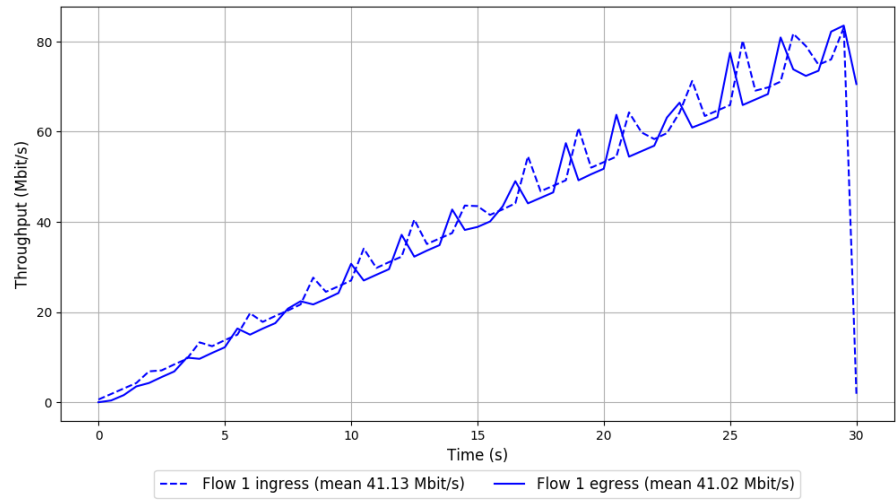

Flow 1 (95th percentile 48.51 ms)

```
Run 4: Statistics of LEDBAT

Start at: 2018-12-01 01:28:53
End at: 2018-12-01 01:29:23
Local clock offset: -0.129 ms
Remote clock offset: -0.094 ms


# Below is generated by plot.py at 2018-12-01 03:23:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 41.02 Mbit/s
95th percentile per-packet one-way delay: 48.423 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 41.02 Mbit/s
95th percentile per-packet one-way delay: 48.423 ms
Loss rate: 0.58%
```

Run 4: Report of LEDBAT — Data Link

Flow 1 ingress (mean 41.13 Mbit/s)   Flow 1 egress (mean 41.02 Mbit/s)
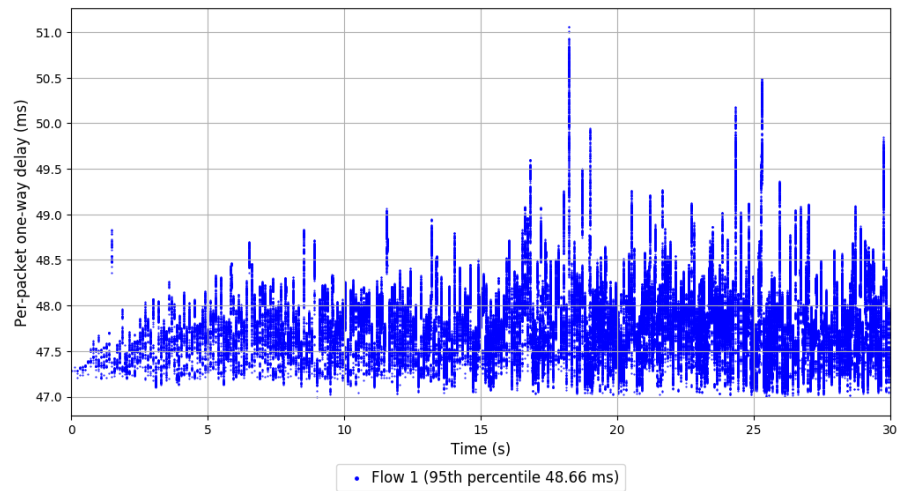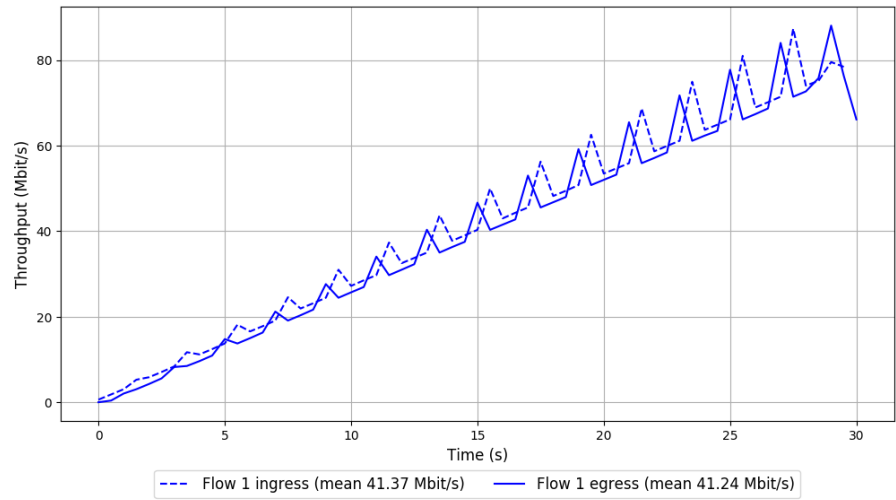

Flow 1 (95th percentile 48.42 ms)

```
Run 5: Statistics of LEDBAT

Start at: 2018-12-01 01:56:51
End at: 2018-12-01 01:57:21
Local clock offset: -0.093 ms
Remote clock offset: -0.052 ms

# Below is generated by plot.py at 2018-12-01 03:23:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 41.24 Mbit/s
95th percentile per-packet one-way delay: 48.660 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 41.24 Mbit/s
95th percentile per-packet one-way delay: 48.660 ms
Loss rate: 0.63%
```

Run 5: Report of LEDBAT — Data Link

Flow 1 ingress (mean 41.37 Mbit/s)   Flow 1 egress (mean 41.24 Mbit/s)
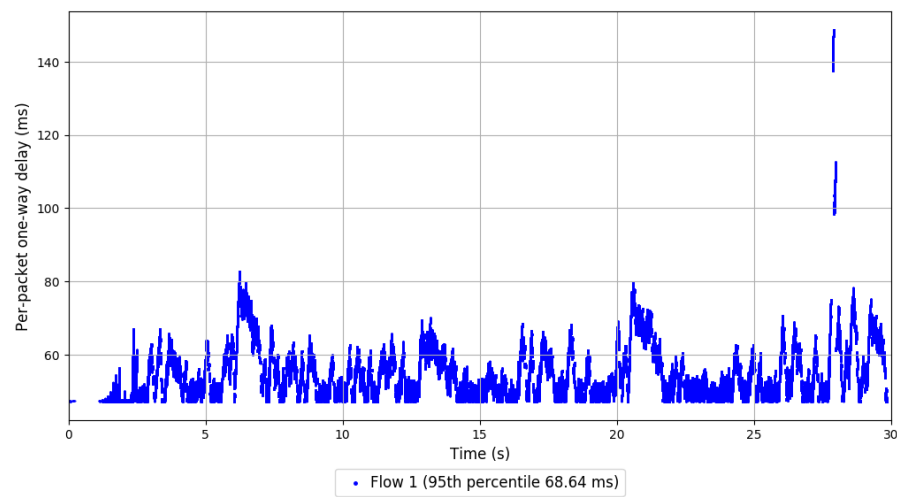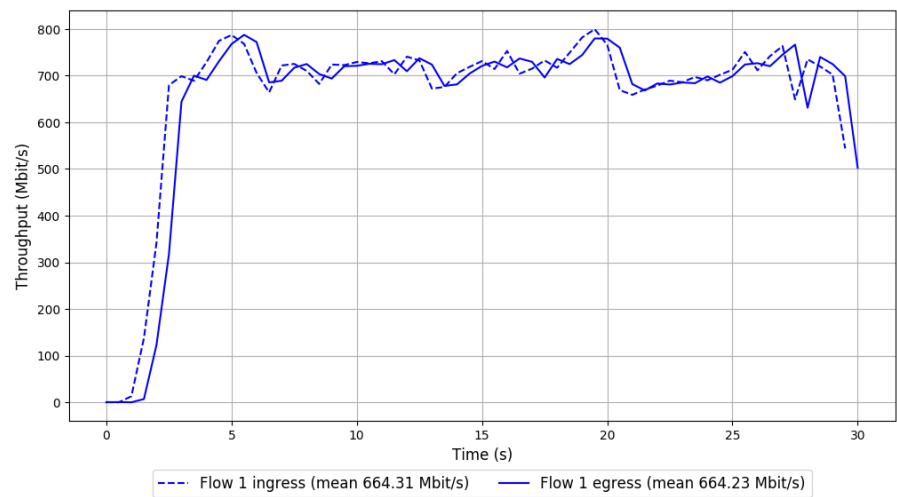

Flow 1 (95th percentile 48.66 ms)

```
Run 1: Statistics of Indigo-Muses

Start at: 2018-12-01 00:12:38
End at: 2018-12-01 00:13:08
Local clock offset: -0.076 ms
Remote clock offset: -0.146 ms


# Below is generated by plot.py at 2018-12-01 03:30:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 664.23 Mbit/s
95th percentile per-packet one-way delay: 68.643 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 664.23 Mbit/s
95th percentile per-packet one-way delay: 68.643 ms
Loss rate: 0.33%
```
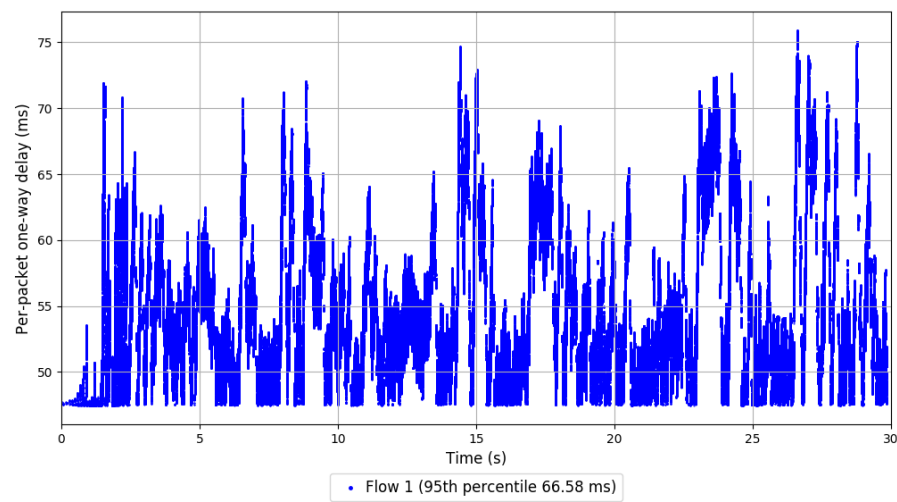
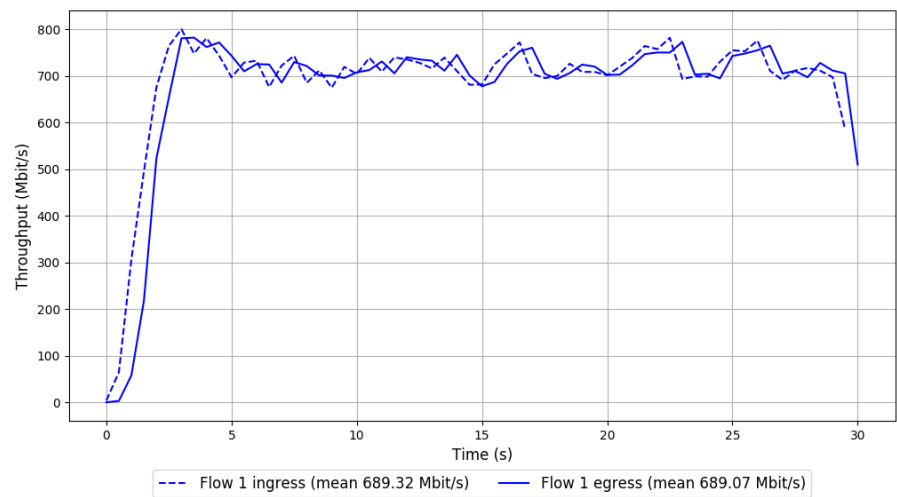Run 1: Report of Indigo-Muses — Data Link

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-12-01 00:40:57
End at: 2018-12-01 00:41:27
Local clock offset: 0.296 ms
Remote clock offset: -0.016 ms


# Below is generated by plot.py at 2018-12-01 03:30:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 689.07 Mbit/s
95th percentile per-packet one-way delay: 66.585 ms
Loss rate: 0.35%
-- Flow 1:
Average throughput: 689.07 Mbit/s
95th percentile per-packet one-way delay: 66.585 ms
Loss rate: 0.35%
```

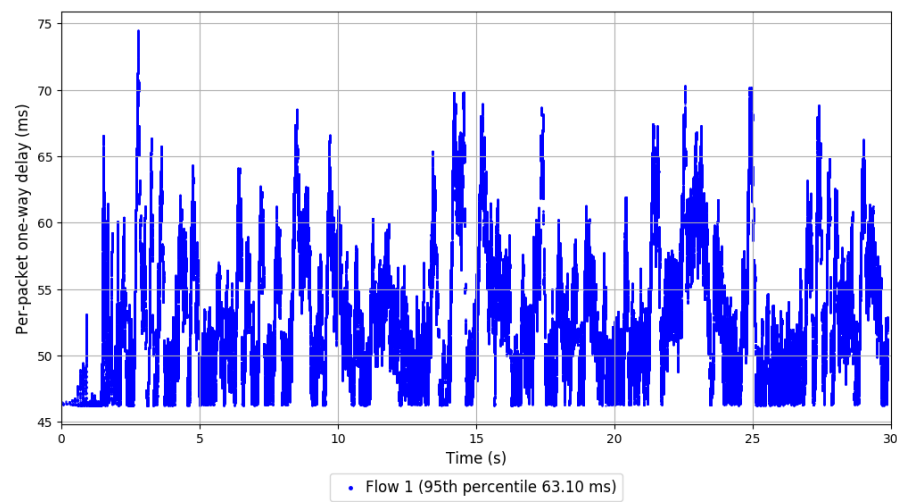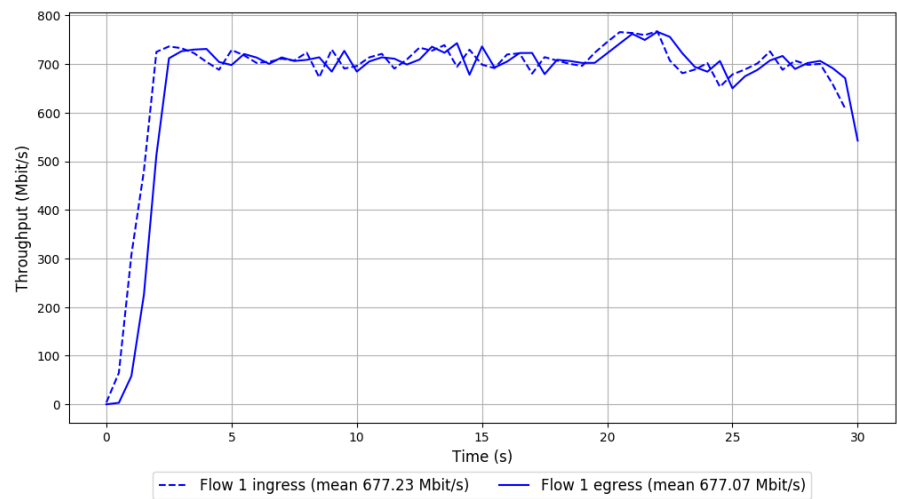Run 2: Report of Indigo-Muses — Data Link

```
Run 3: Statistics of Indigo-Muses

Start at: 2018-12-01 01:09:06
End at: 2018-12-01 01:09:36
Local clock offset: -0.221 ms
Remote clock offset: -0.054 ms


# Below is generated by plot.py at 2018-12-01 03:30:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 677.07 Mbit/s
95th percentile per-packet one-way delay: 63.103 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 677.07 Mbit/s
95th percentile per-packet one-way delay: 63.103 ms
Loss rate: 0.34%
```

Run 3: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 677.23 Mbit/s)   Flow 1 egress (mean 677.07 Mbit/s)
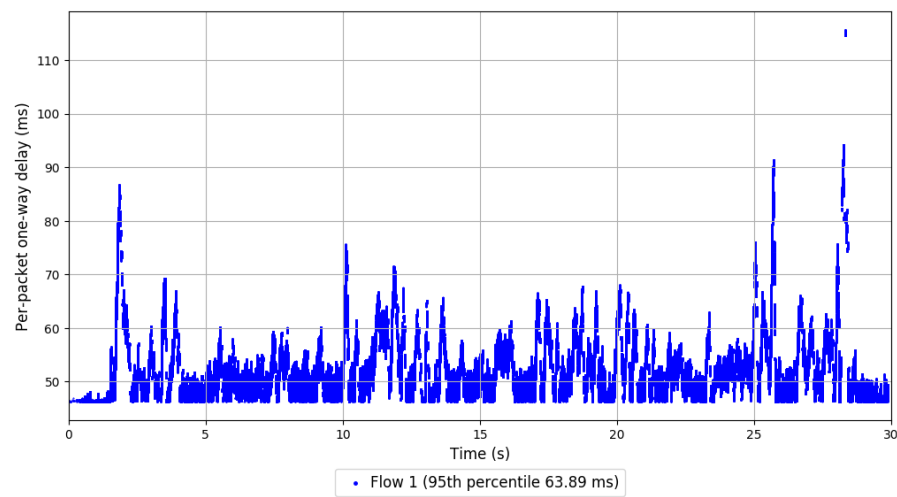
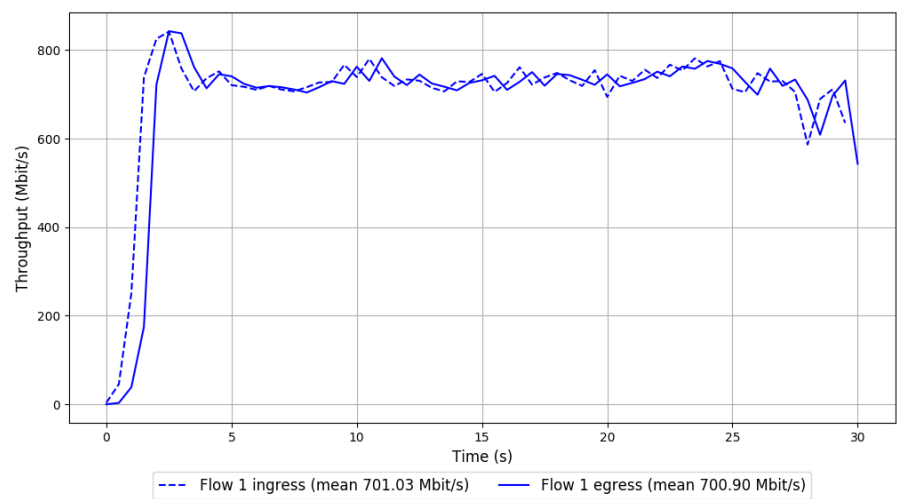

• Flow 1 (95th percentile 63.10 ms)

```
Run 4: Statistics of Indigo-Muses

Start at: 2018-12-01 01:37:00
End at: 2018-12-01 01:37:30
Local clock offset: -0.114 ms
Remote clock offset: -0.073 ms


# Below is generated by plot.py at 2018-12-01 03:31:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 700.90 Mbit/s
95th percentile per-packet one-way delay: 63.892 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 700.90 Mbit/s
95th percentile per-packet one-way delay: 63.892 ms
Loss rate: 0.33%
```

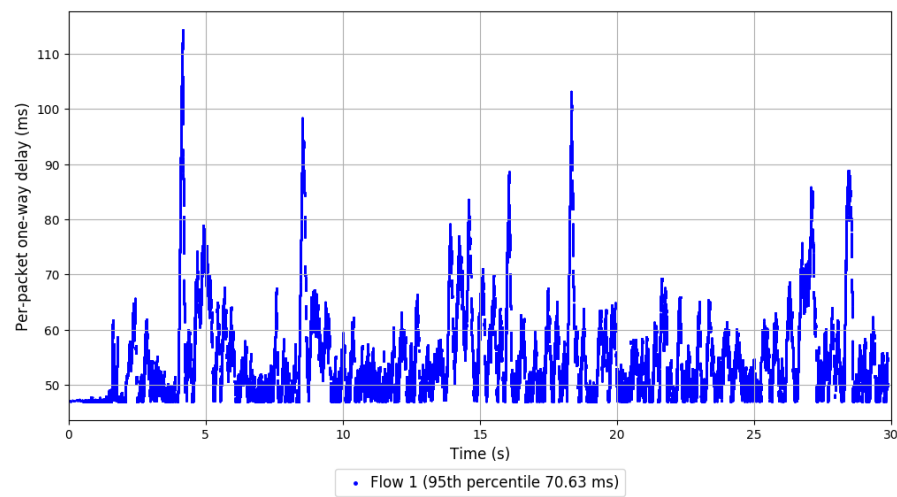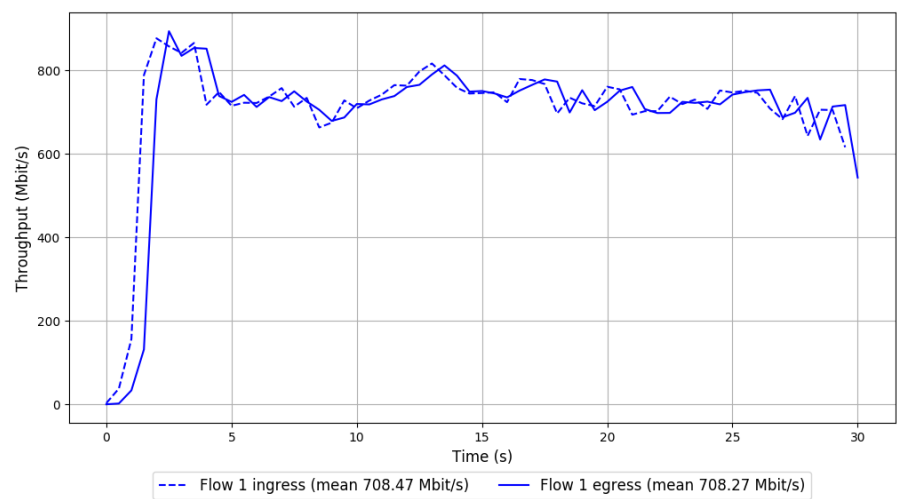Run 4: Report of Indigo-Muses — Data Link

```
Run 5: Statistics of Indigo-Muses

Start at: 2018-12-01 02:05:09
End at: 2018-12-01 02:05:39
Local clock offset: -0.068 ms
Remote clock offset: -0.046 ms


# Below is generated by plot.py at 2018-12-01 03:32:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 708.27 Mbit/s
95th percentile per-packet one-way delay: 70.630 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 708.27 Mbit/s
95th percentile per-packet one-way delay: 70.630 ms
Loss rate: 0.34%
```

Run 5: Report of Indigo-Muses — Data Link

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-11-30 23:59:16
End at: 2018-11-30 23:59:46
Local clock offset: -0.099 ms
Remote clock offset: -0.111 ms


# Below is generated by plot.py at 2018-12-01 03:36:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 470.81 Mbit/s
95th percentile per-packet one-way delay: 158.645 ms
Loss rate: 2.92%
-- Flow 1:
Average throughput: 470.81 Mbit/s
95th percentile per-packet one-way delay: 158.645 ms
Loss rate: 2.92%
```
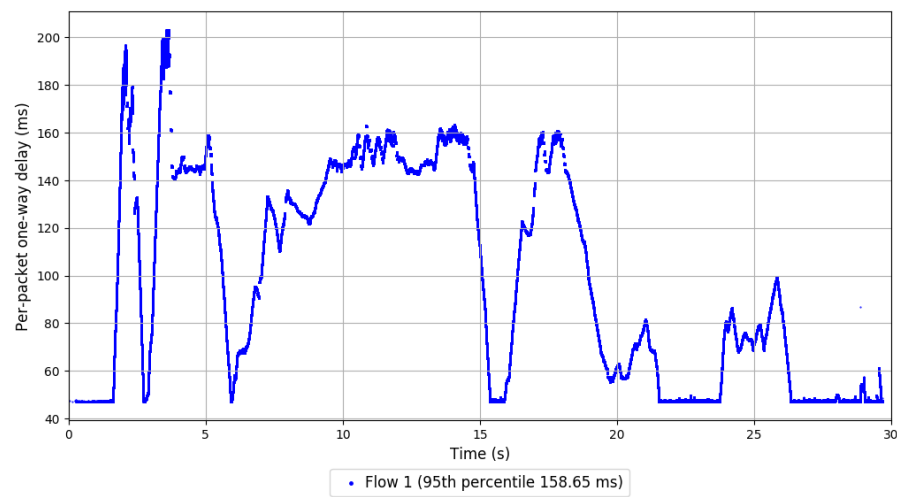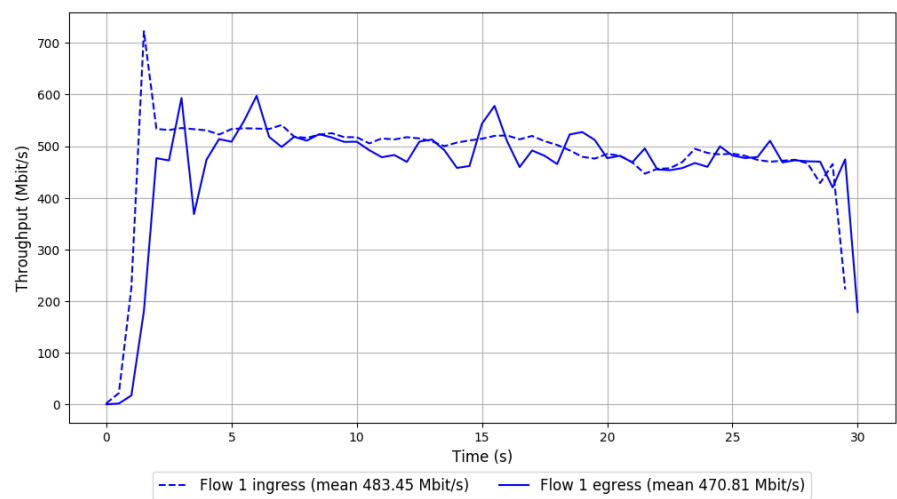
Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-12-01 00:27:16
End at: 2018-12-01 00:27:47
Local clock offset: -0.09 ms
Remote clock offset: -0.049 ms


# Below is generated by plot.py at 2018-12-01 03:37:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 495.16 Mbit/s
95th percentile per-packet one-way delay: 151.896 ms
Loss rate: 2.50%
-- Flow 1:
Average throughput: 495.16 Mbit/s
95th percentile per-packet one-way delay: 151.896 ms
Loss rate: 2.50%
```
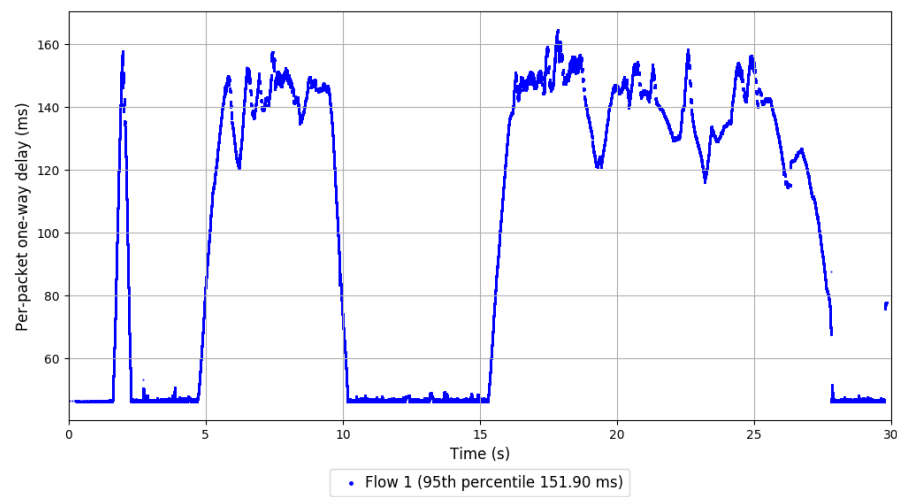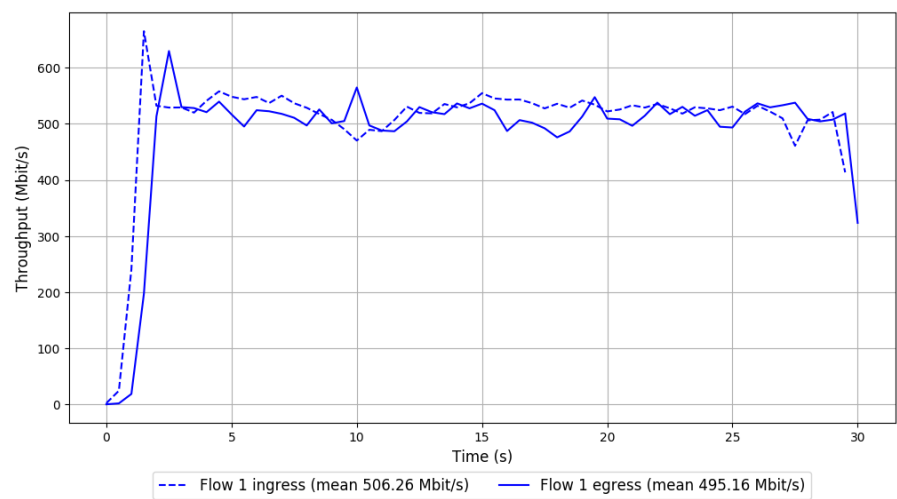
Run 2: Report of PCC-Allegro — Data Link

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-12-01 00:55:54
End at: 2018-12-01 00:56:24
Local clock offset: -0.139 ms
Remote clock offset: -0.083 ms


# Below is generated by plot.py at 2018-12-01 03:40:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 445.29 Mbit/s
95th percentile per-packet one-way delay: 145.900 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 445.29 Mbit/s
95th percentile per-packet one-way delay: 145.900 ms
Loss rate: 0.63%
```
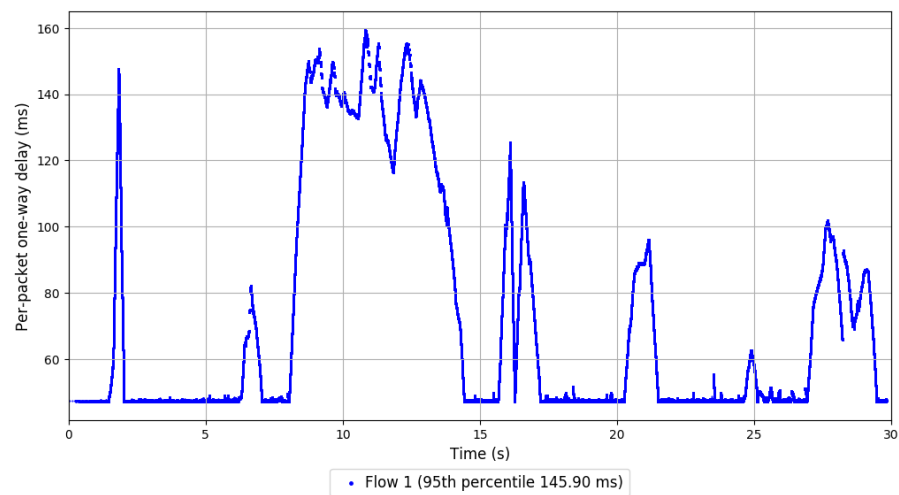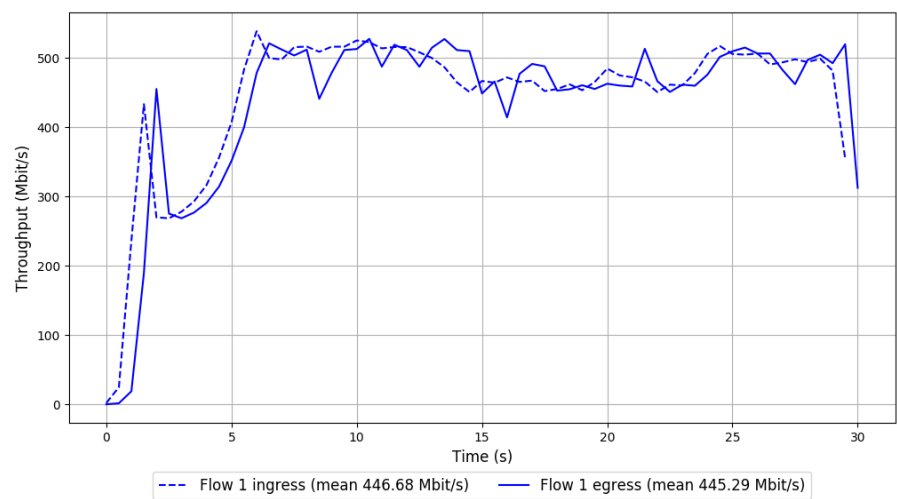
Run 3: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 446.68 Mbit/s)   Flow 1 egress (mean 445.29 Mbit/s)
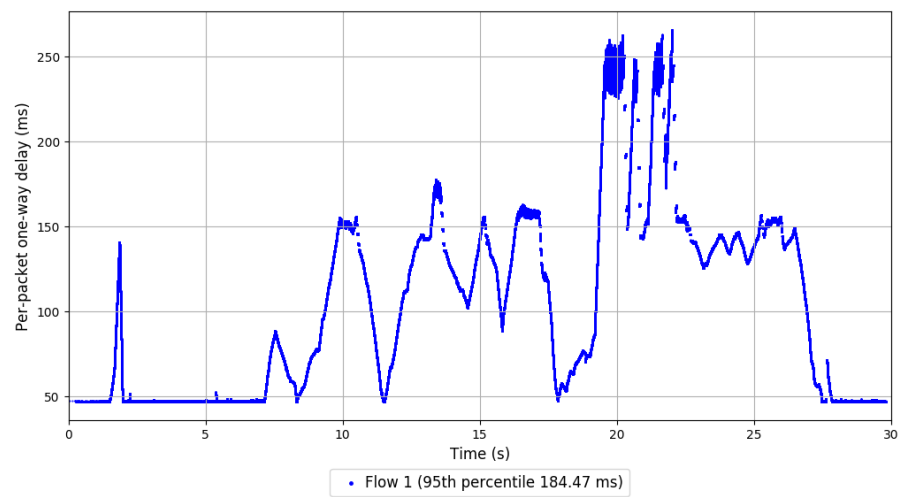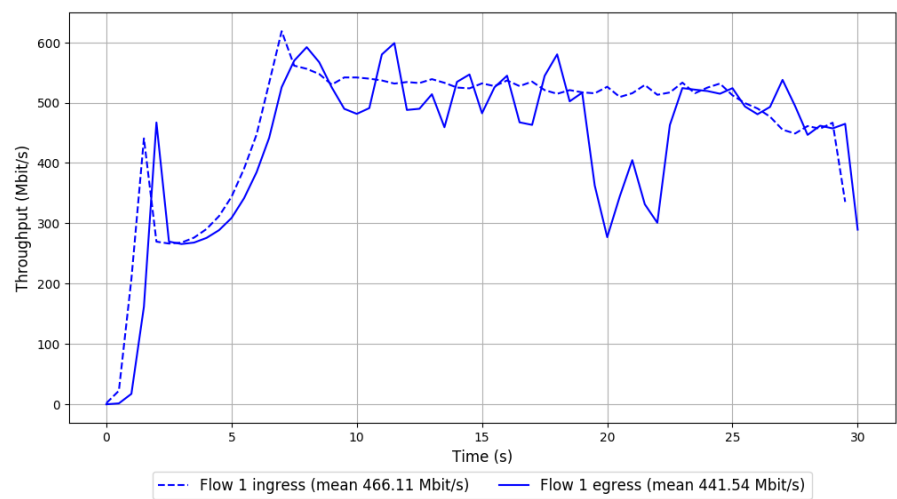

Flow 1 (95th percentile 145.90 ms)

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-12-01 01:23:45
End at: 2018-12-01 01:24:15
Local clock offset: -0.199 ms
Remote clock offset: -0.091 ms


# Below is generated by plot.py at 2018-12-01 03:47:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 441.54 Mbit/s
95th percentile per-packet one-way delay: 184.470 ms
Loss rate: 5.57%
-- Flow 1:
Average throughput: 441.54 Mbit/s
95th percentile per-packet one-way delay: 184.470 ms
Loss rate: 5.57%
```

Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 466.11 Mbit/s) — — — Flow 1 egress (mean 441.54 Mbit/s)

· Flow 1 (95th percentile 184.47 ms)

```
Run 5: Statistics of PCC-Allegro

Start at: 2018-12-01 01:51:44
End at: 2018-12-01 01:52:14
Local clock offset: -0.444 ms
Remote clock offset: -0.027 ms


# Below is generated by plot.py at 2018-12-01 03:48:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 481.23 Mbit/s
95th percentile per-packet one-way delay: 139.969 ms
Loss rate: 0.80%
-- Flow 1:
Average throughput: 481.23 Mbit/s
95th percentile per-packet one-way delay: 139.969 ms
Loss rate: 0.80%
```
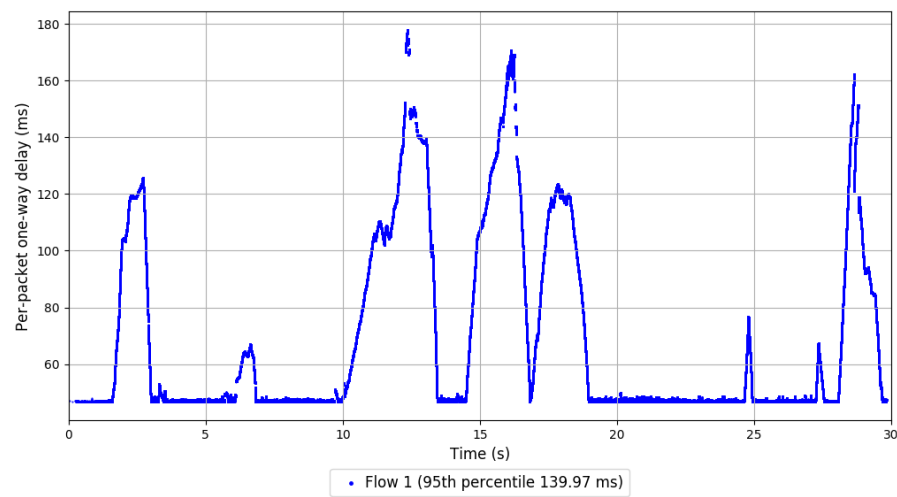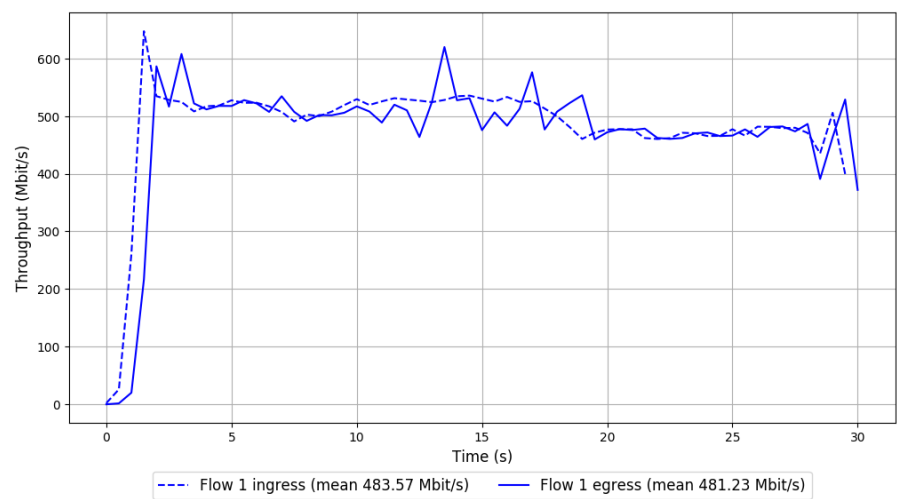
Run 5: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 483.57 Mbit/s) --- Flow 1 egress (mean 481.23 Mbit/s)

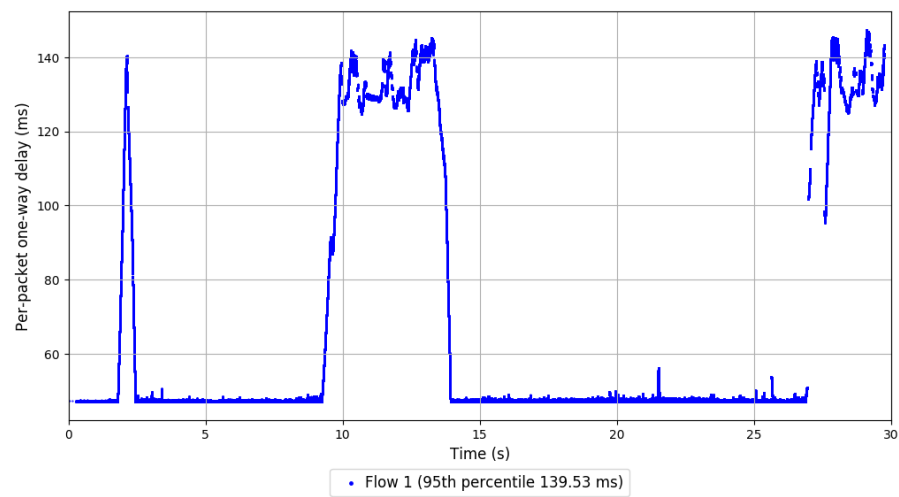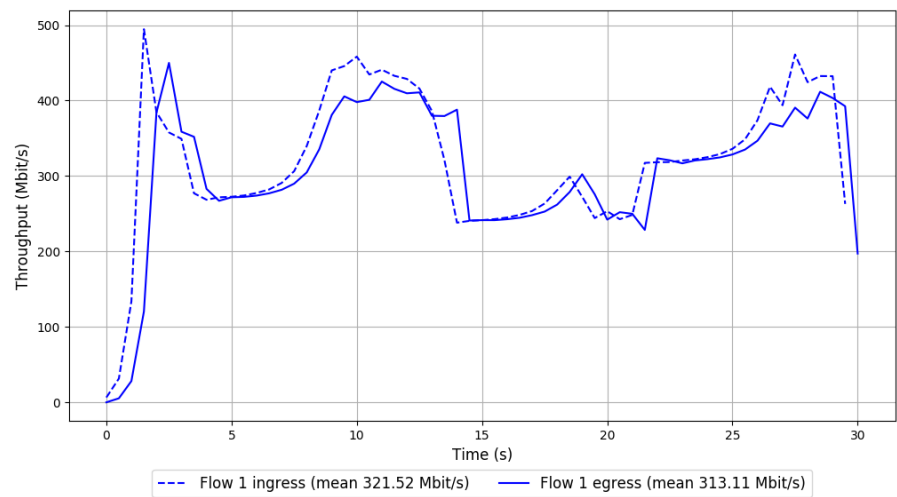
• Flow 1 (95th percentile 139.97 ms)

```
Run 1: Statistics of PCC-Expr

Start at: 2018-11-30 23:57:40
End at: 2018-11-30 23:58:10
Local clock offset: -0.082 ms
Remote clock offset: -0.106 ms


# Below is generated by plot.py at 2018-12-01 03:48:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 313.11 Mbit/s
95th percentile per-packet one-way delay: 139.527 ms
Loss rate: 2.92%
-- Flow 1:
Average throughput: 313.11 Mbit/s
95th percentile per-packet one-way delay: 139.527 ms
Loss rate: 2.92%
```

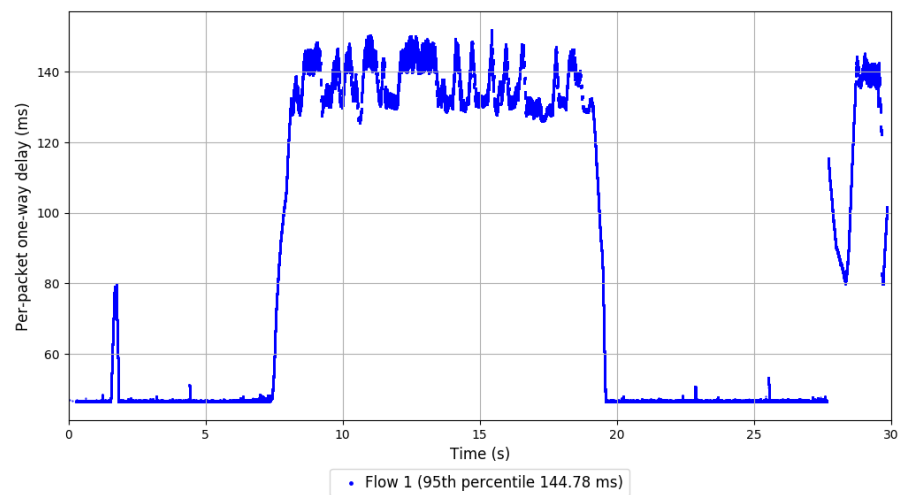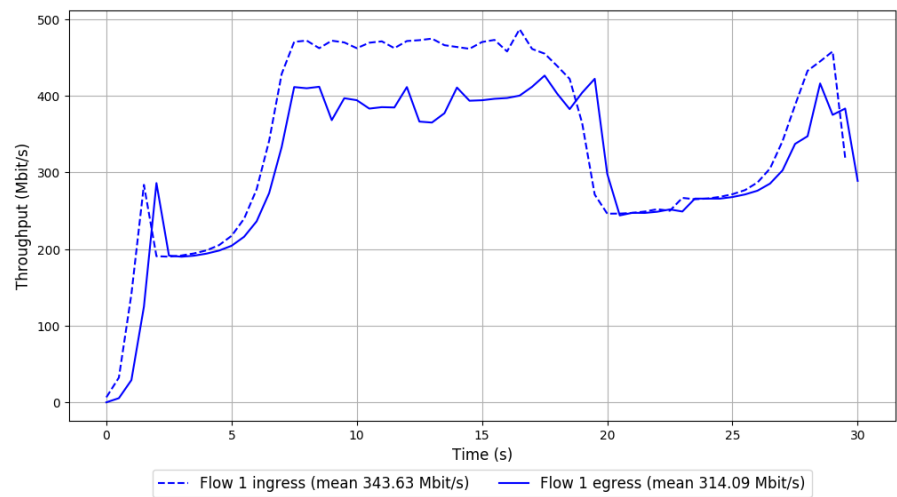Run 1: Report of PCC-Expr — Data Link

```
Run 2: Statistics of PCC-Expr

Start at: 2018-12-01 00:25:40
End at: 2018-12-01 00:26:10
Local clock offset: -0.049 ms
Remote clock offset: -0.158 ms


# Below is generated by plot.py at 2018-12-01 03:48:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 314.09 Mbit/s
95th percentile per-packet one-way delay: 144.785 ms
Loss rate: 8.88%
-- Flow 1:
Average throughput: 314.09 Mbit/s
95th percentile per-packet one-way delay: 144.785 ms
Loss rate: 8.88%
```
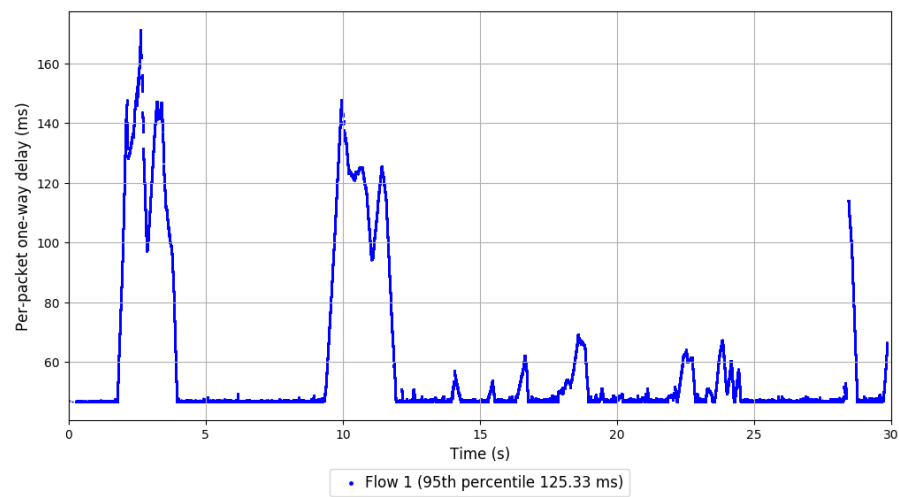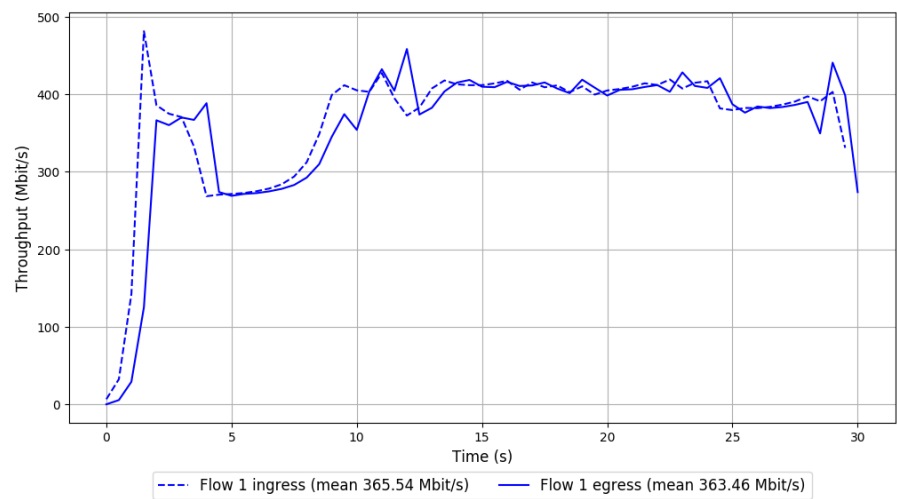
Run 2: Report of PCC-Expr — Data Link

```
Run 3: Statistics of PCC-Expr

Start at: 2018-12-01 00:54:15
End at: 2018-12-01 00:54:45
Local clock offset: -0.47 ms
Remote clock offset: -0.109 ms


# Below is generated by plot.py at 2018-12-01 03:48:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 363.46 Mbit/s
95th percentile per-packet one-way delay: 125.334 ms
Loss rate: 0.88%
-- Flow 1:
Average throughput: 363.46 Mbit/s
95th percentile per-packet one-way delay: 125.334 ms
Loss rate: 0.88%
```

Run 3: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 365.54 Mbit/s)   ——— Flow 1 egress (mean 363.46 Mbit/s)

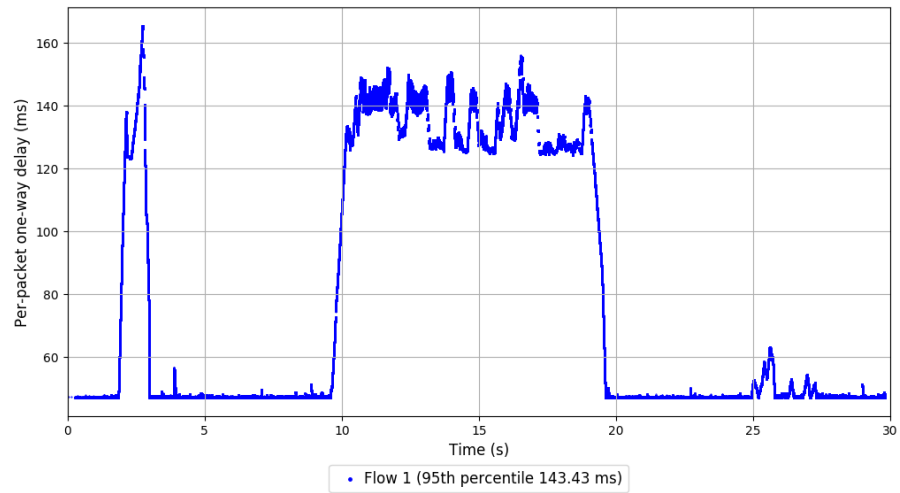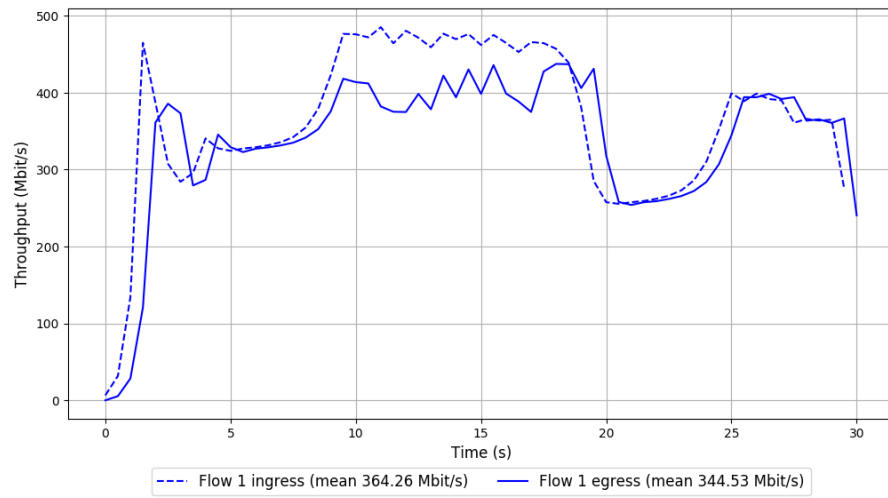
• Flow 1 (95th percentile 125.33 ms)

```
Run 4: Statistics of PCC-Expr

Start at: 2018-12-01 01:22:07
End at: 2018-12-01 01:22:37
Local clock offset: -0.228 ms
Remote clock offset: -0.157 ms


# Below is generated by plot.py at 2018-12-01 03:49:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 344.53 Mbit/s
95th percentile per-packet one-way delay: 143.432 ms
Loss rate: 5.72%
-- Flow 1:
Average throughput: 344.53 Mbit/s
95th percentile per-packet one-way delay: 143.432 ms
Loss rate: 5.72%
```

Run 4: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 364.26 Mbit/s)   Flow 1 egress (mean 344.53 Mbit/s)

Flow 1 (95th percentile 143.43 ms)

```
Run 5: Statistics of PCC-Expr

Start at: 2018-12-01 01:50:06
End at: 2018-12-01 01:50:36
Local clock offset: -0.455 ms
Remote clock offset: -0.07 ms


# Below is generated by plot.py at 2018-12-01 03:49:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 336.18 Mbit/s
95th percentile per-packet one-way delay: 102.735 ms
Loss rate: 1.20%
-- Flow 1:
Average throughput: 336.18 Mbit/s
95th percentile per-packet one-way delay: 102.735 ms
Loss rate: 1.20%
```
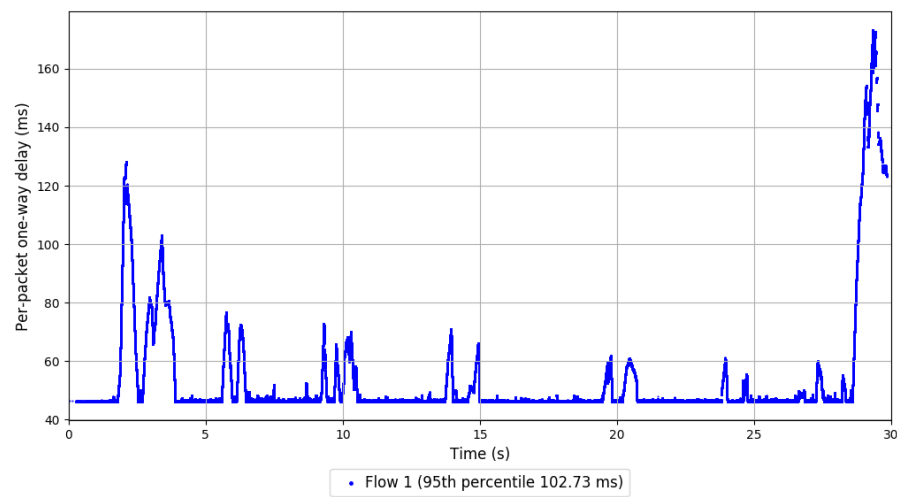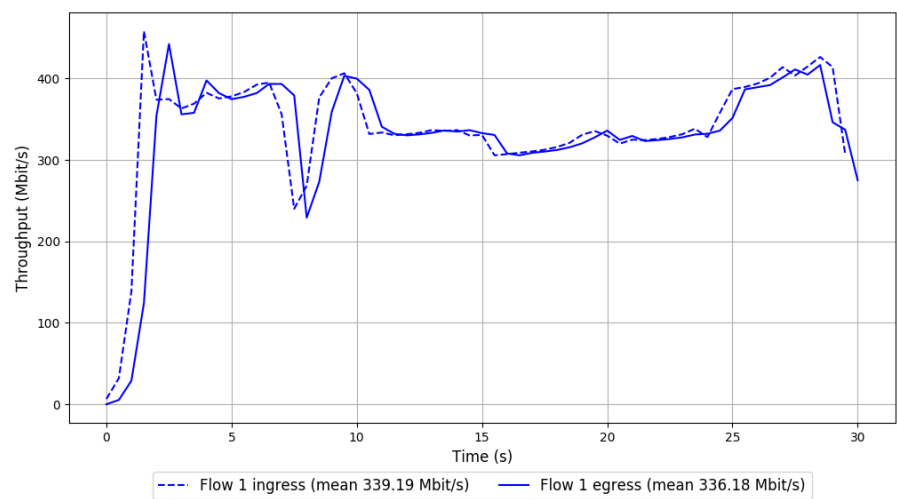
Run 5: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 339.19 Mbit/s) —— Flow 1 egress (mean 336.18 Mbit/s)

• Flow 1 (95th percentile 102.73 ms)
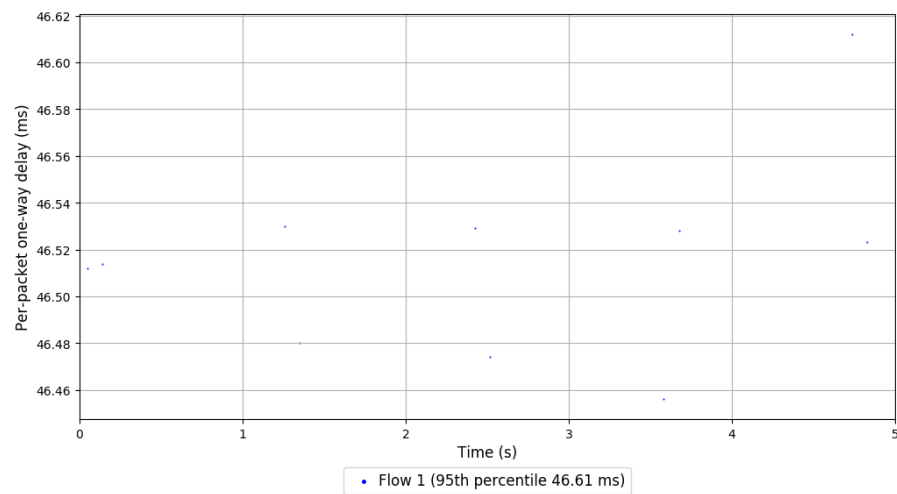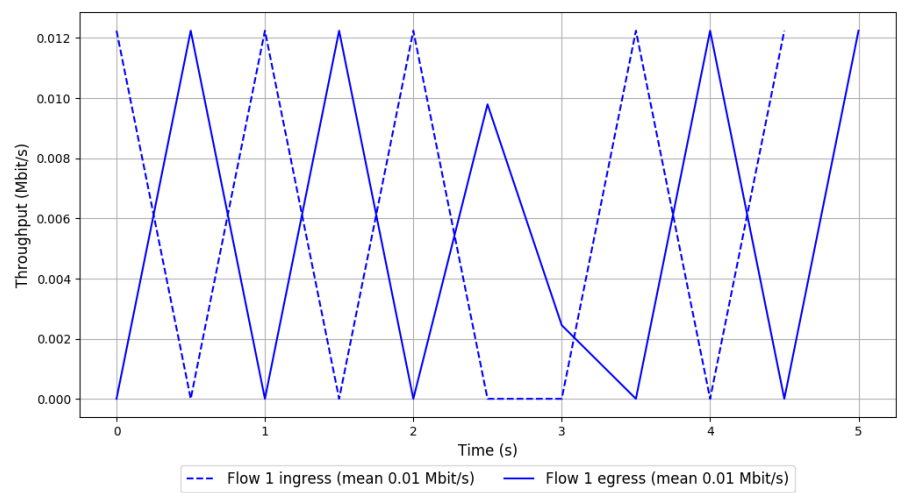
Run 1: Statistics of QUIC Cubic

Start at: 2018-11-30 23:52:26
End at: 2018-11-30 23:52:56
Local clock offset: -0.124 ms
Remote clock offset: -0.089 ms

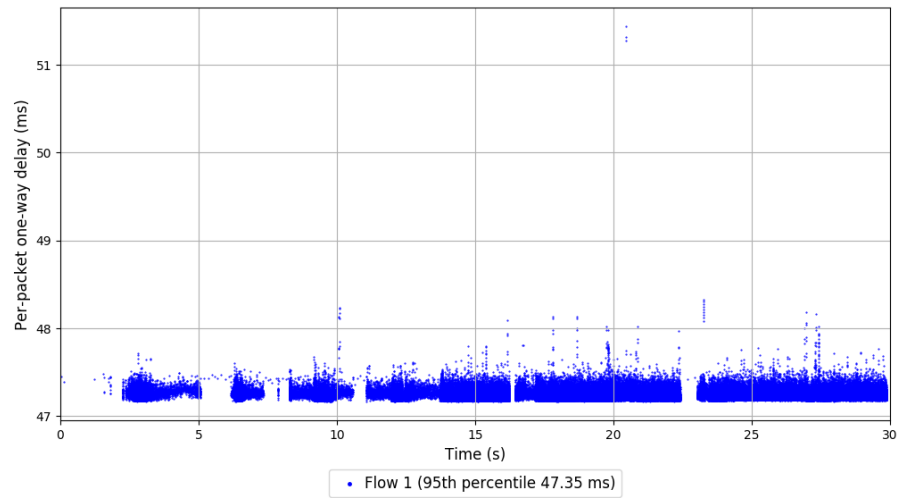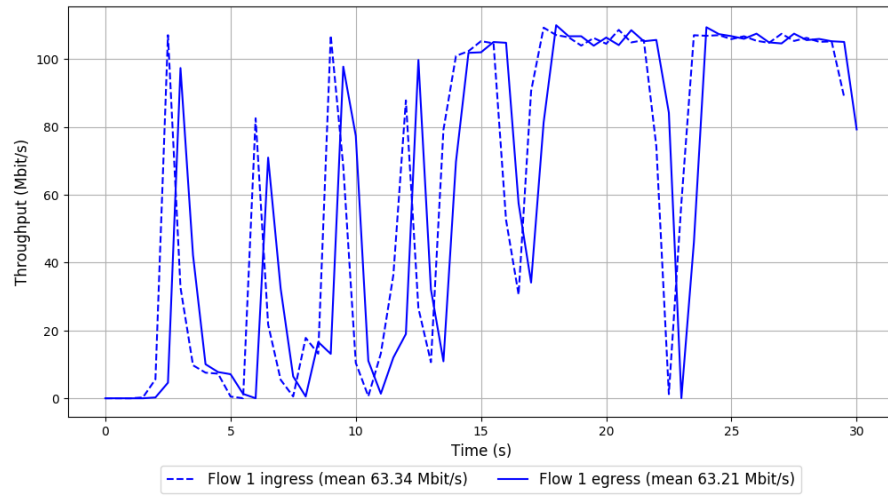Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-12-01 00:20:00
End at: 2018-12-01 00:20:30
Local clock offset: -0.062 ms
Remote clock offset: -0.098 ms


# Below is generated by plot.py at 2018-12-01 03:49:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 63.21 Mbit/s
95th percentile per-packet one-way delay: 47.348 ms
Loss rate: 0.52%
-- Flow 1:
Average throughput: 63.21 Mbit/s
95th percentile per-packet one-way delay: 47.348 ms
Loss rate: 0.52%
```

Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-12-01 00:48:37
End at: 2018-12-01 00:49:07
Local clock offset: -0.048 ms
Remote clock offset: 0.0 ms


# Below is generated by plot.py at 2018-12-01 03:49:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 68.39 Mbit/s
95th percentile per-packet one-way delay: 46.439 ms
Loss rate: 0.48%
-- Flow 1:
Average throughput: 68.39 Mbit/s
95th percentile per-packet one-way delay: 46.439 ms
Loss rate: 0.48%
```
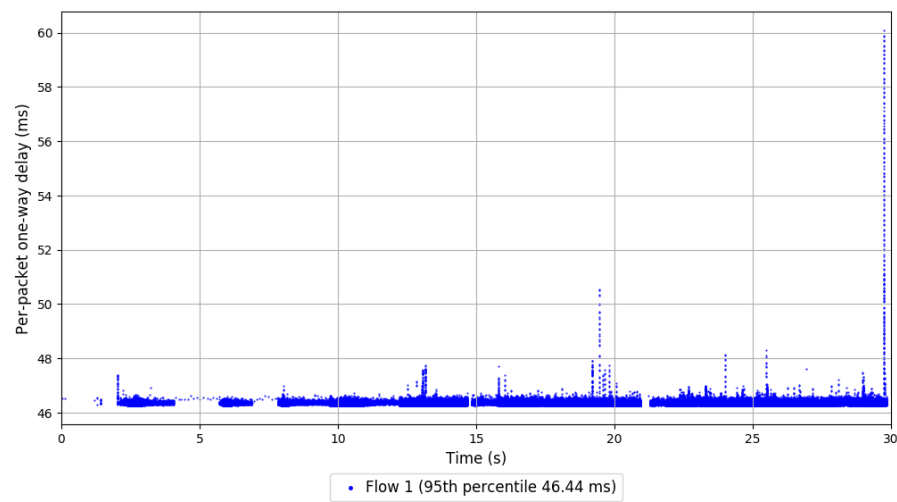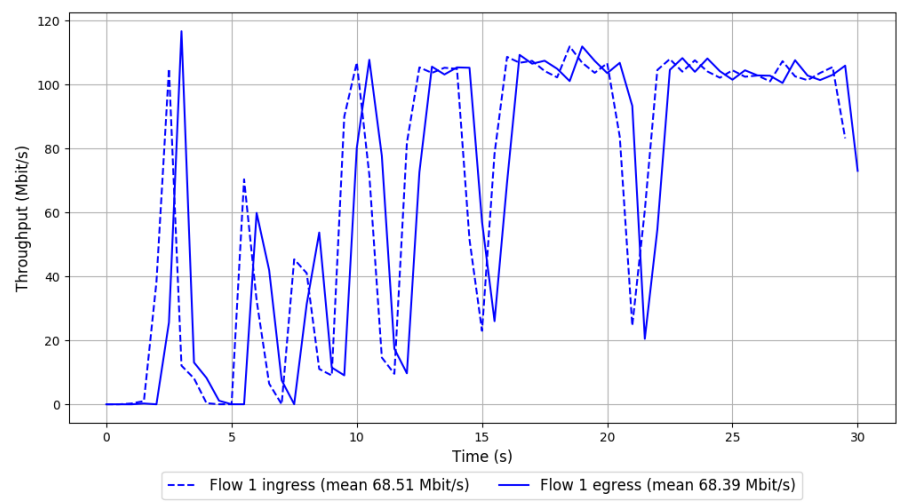
Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 68.51 Mbit/s)   Flow 1 egress (mean 68.39 Mbit/s)
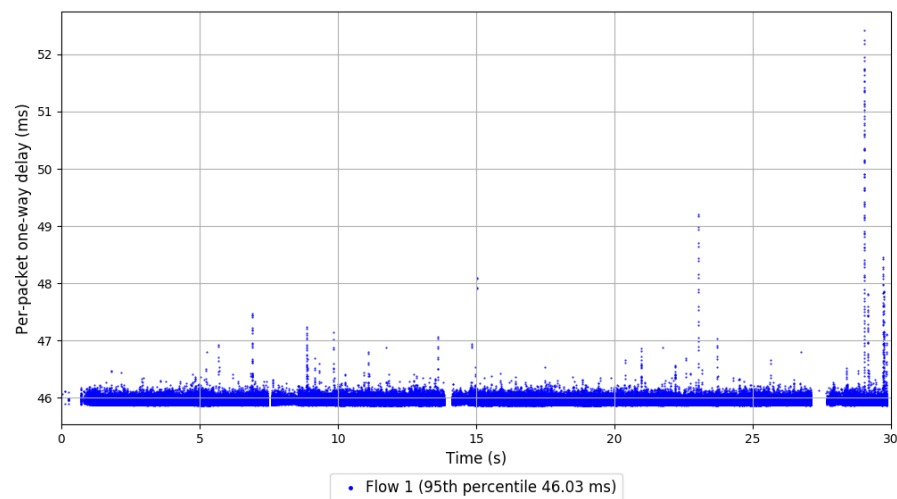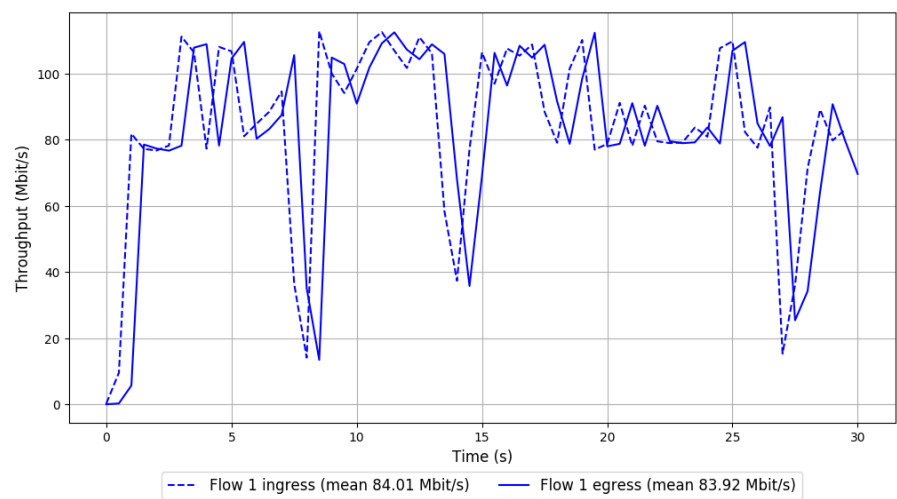

Flow 1 (95th percentile 46.44 ms)

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-12-01 01:16:29
End at: 2018-12-01 01:16:59
Local clock offset: -0.562 ms
Remote clock offset: -0.048 ms


# Below is generated by plot.py at 2018-12-01 03:49:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 83.92 Mbit/s
95th percentile per-packet one-way delay: 46.030 ms
Loss rate: 0.41%
-- Flow 1:
Average throughput: 83.92 Mbit/s
95th percentile per-packet one-way delay: 46.030 ms
Loss rate: 0.41%
```

Run 4: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 84.01 Mbit/s)   Flow 1 egress (mean 83.92 Mbit/s)

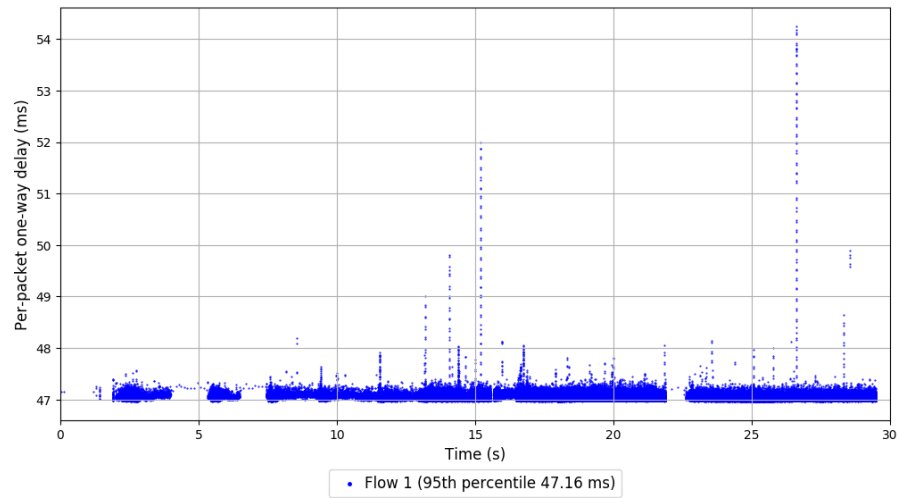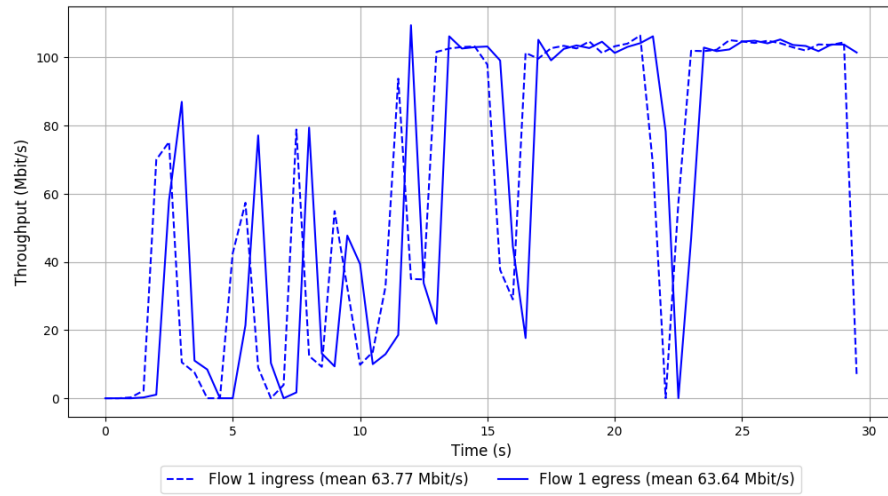

· Flow 1 (95th percentile 46.03 ms)

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-12-01 01:44:29
End at: 2018-12-01 01:44:59
Local clock offset: -0.103 ms
Remote clock offset: -0.044 ms


# Below is generated by plot.py at 2018-12-01 03:49:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 63.64 Mbit/s
95th percentile per-packet one-way delay: 47.156 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 63.64 Mbit/s
95th percentile per-packet one-way delay: 47.156 ms
Loss rate: 0.51%
```

Run 5: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 63.77 Mbit/s)   Flow 1 egress (mean 63.64 Mbit/s)

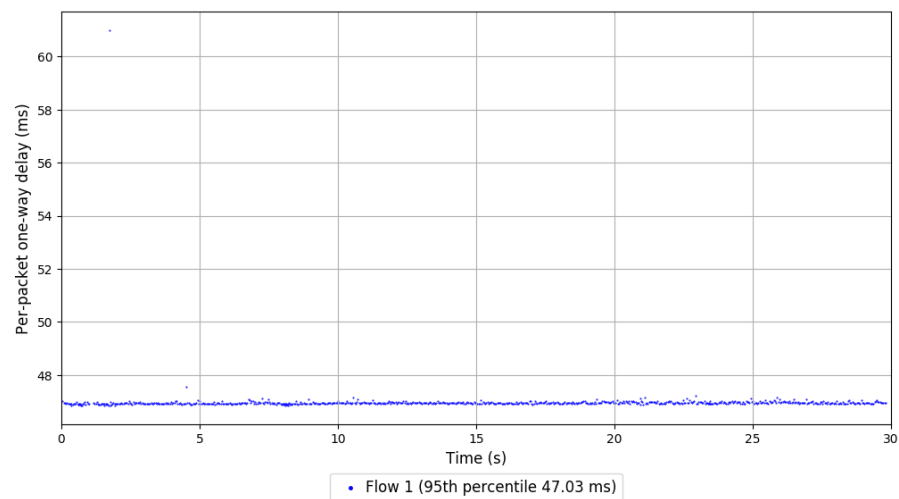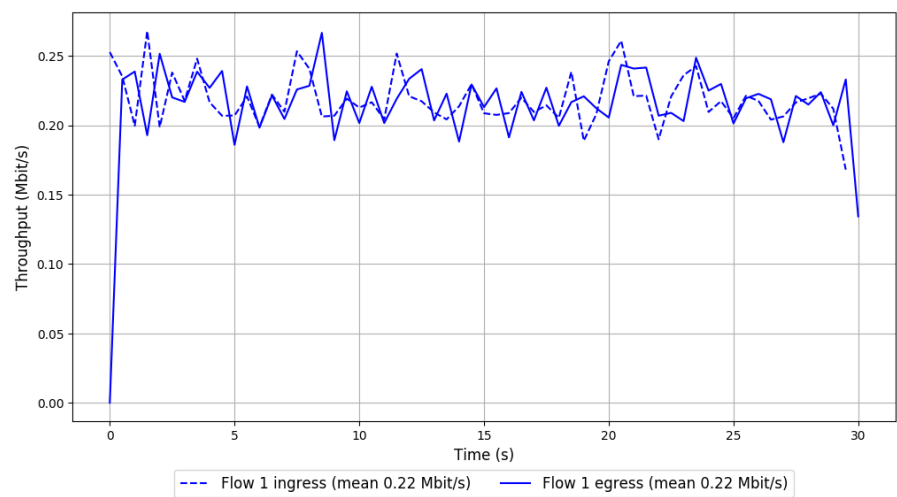

• Flow 1 (95th percentile 47.16 ms)

```
Run 1: Statistics of SCReAM

Start at: 2018-12-01 00:07:10
End at: 2018-12-01 00:07:40
Local clock offset: -0.461 ms
Remote clock offset: -0.111 ms


# Below is generated by plot.py at 2018-12-01 03:49:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 47.030 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 47.030 ms
Loss rate: 0.38%
```
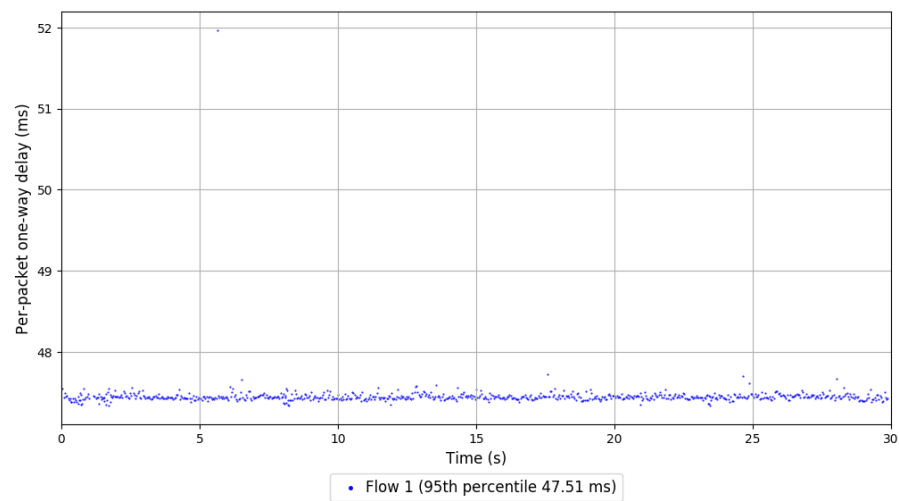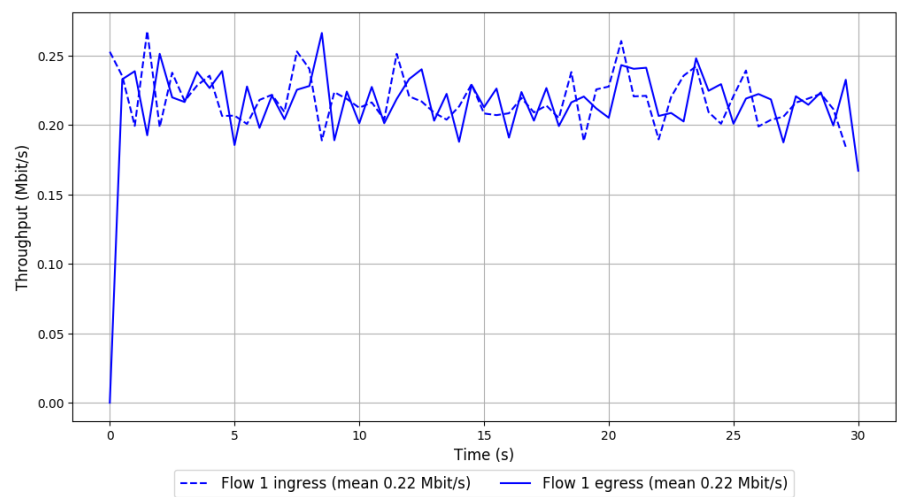
Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-12-01 00:35:36
End at: 2018-12-01 00:36:06
Local clock offset: -0.101 ms
Remote clock offset: -0.064 ms


# Below is generated by plot.py at 2018-12-01 03:49:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 47.514 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 47.514 ms
Loss rate: 0.26%
```

Run 2: Report of SCReAM — Data Link

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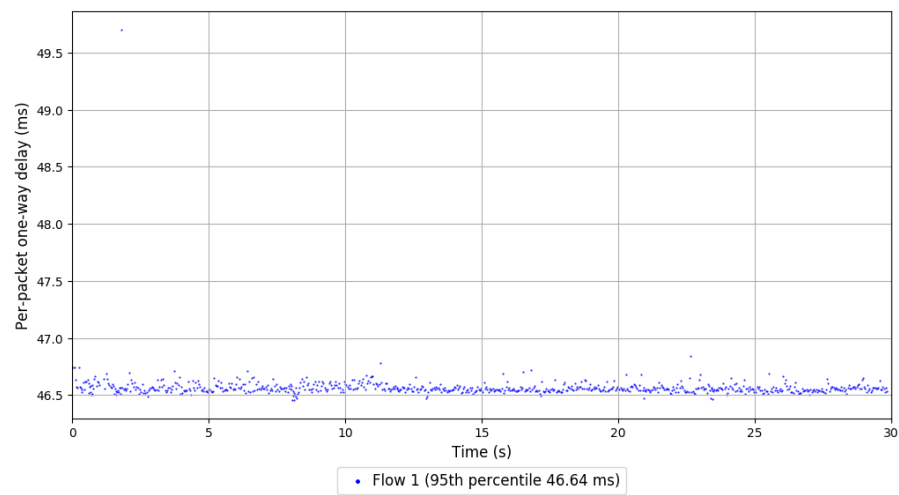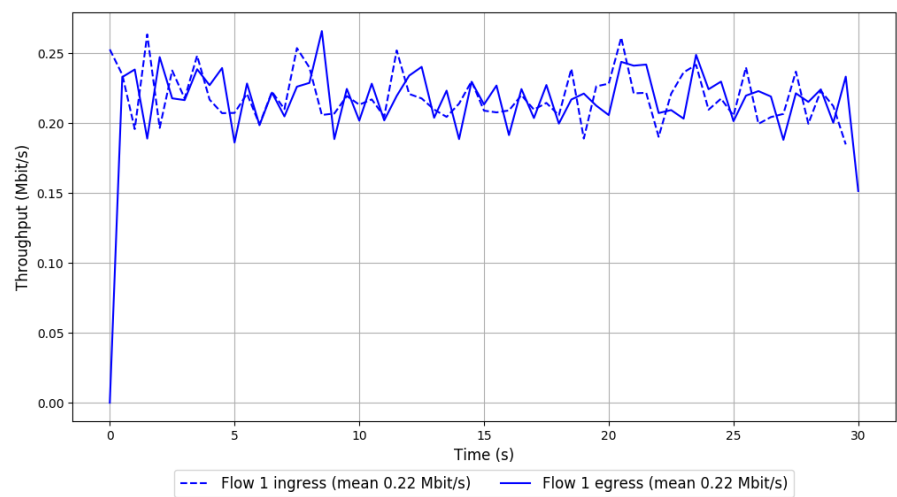

Flow 1 (95th percentile 47.51 ms)

```
Run 3: Statistics of SCReAM

Start at: 2018-12-01 01:03:44
End at: 2018-12-01 01:04:14
Local clock offset: -0.163 ms
Remote clock offset: -0.105 ms


# Below is generated by plot.py at 2018-12-01 03:49:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 46.642 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 46.642 ms
Loss rate: 0.38%
```
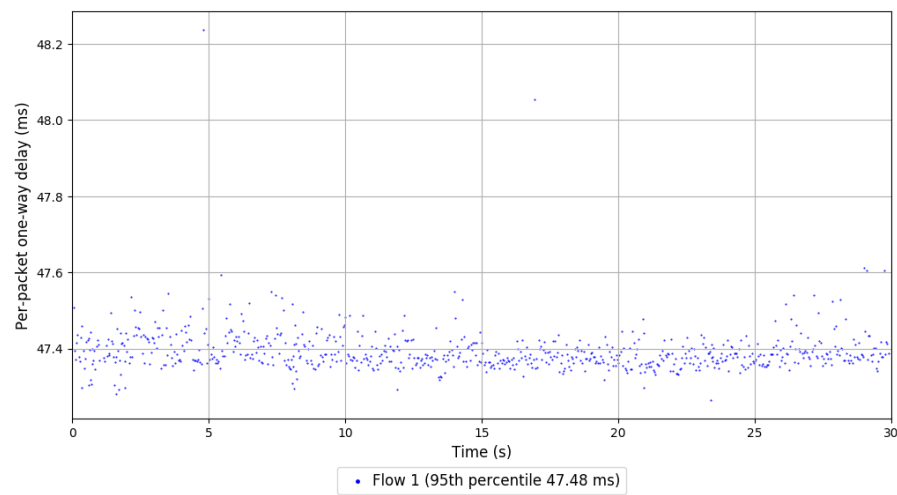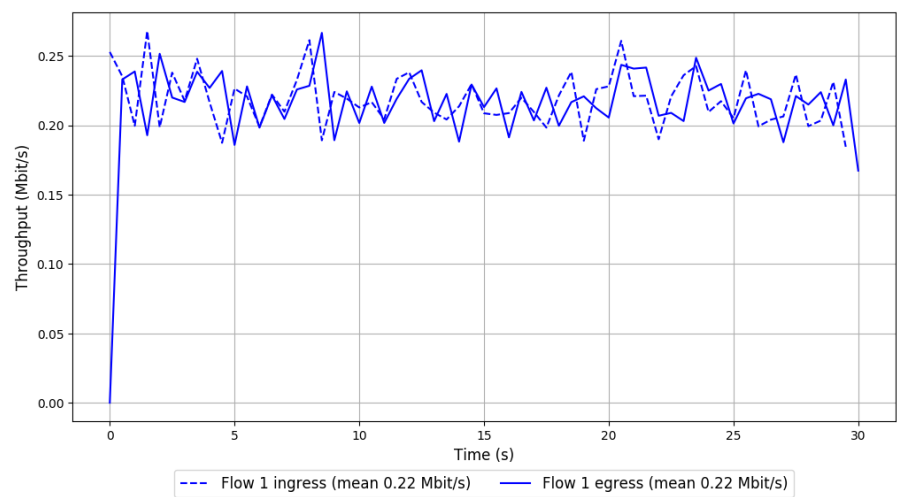
Run 3: Report of SCReAM — Data Link

```
Run 4: Statistics of SCReAM

Start at: 2018-12-01 01:31:35
End at: 2018-12-01 01:32:05
Local clock offset: -0.114 ms
Remote clock offset: -0.067 ms


# Below is generated by plot.py at 2018-12-01 03:49:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 47.480 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 47.480 ms
Loss rate: 0.26%
```

Run 4: Report of SCReAM — Data Link

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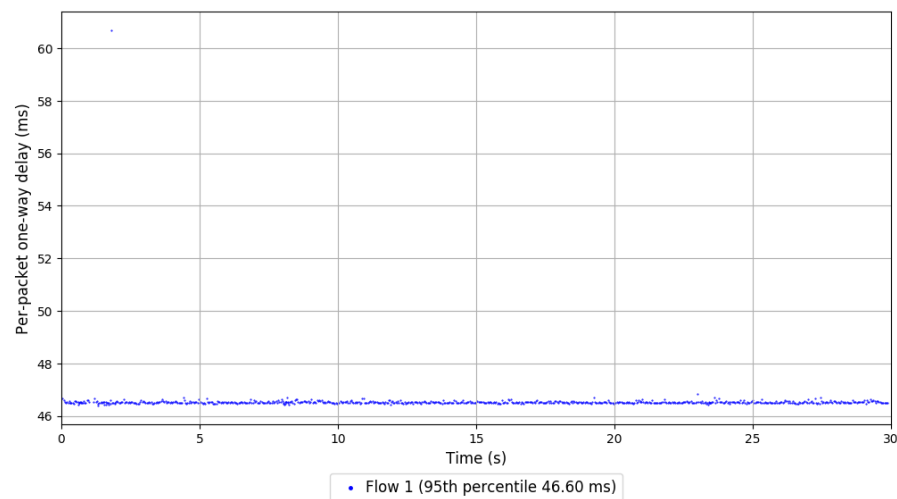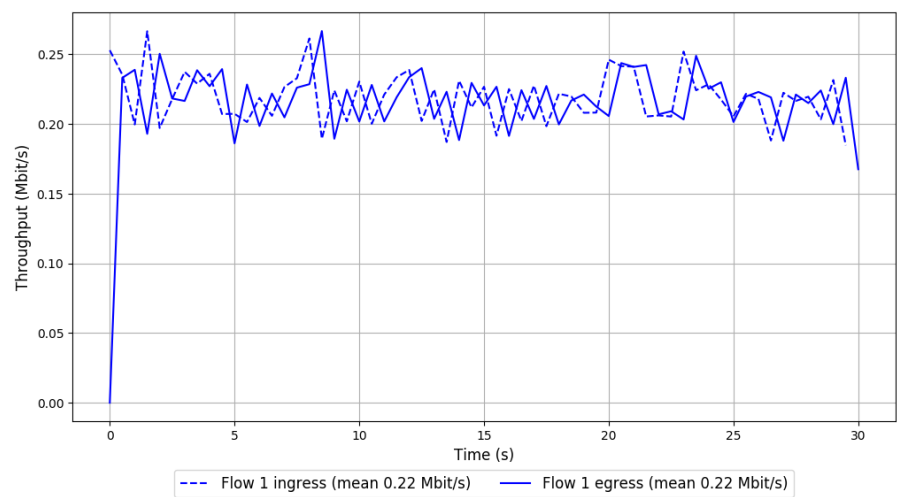

Flow 1 (95th percentile 47.48 ms)

```
Run 5: Statistics of SCReAM

Start at: 2018-12-01 01:59:37
End at: 2018-12-01 02:00:08
Local clock offset: -0.075 ms
Remote clock offset: -0.013 ms


# Below is generated by plot.py at 2018-12-01 03:49:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 46.602 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 46.602 ms
Loss rate: 0.26%
```
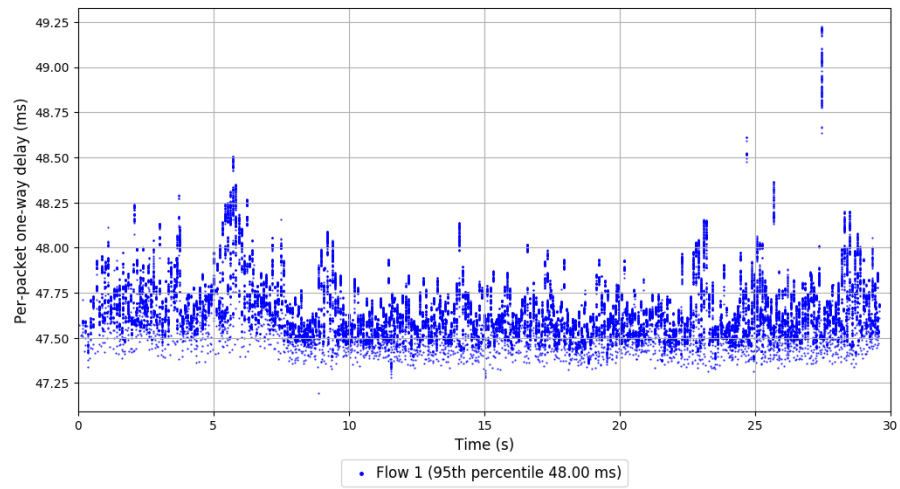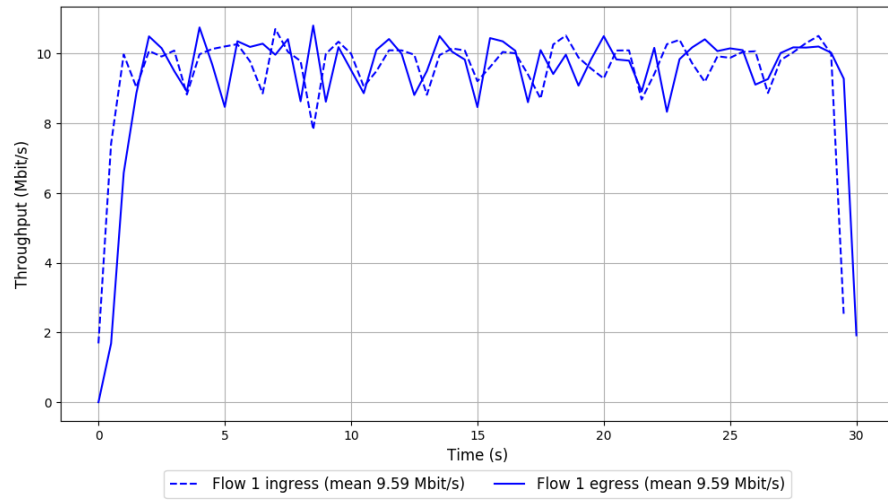
Run 5: Report of SCReAM — Data Link

```
Run 1: Statistics of Sprout

Start at: 2018-12-01 00:08:18
End at: 2018-12-01 00:08:48
Local clock offset: -0.099 ms
Remote clock offset: -0.153 ms


# Below is generated by plot.py at 2018-12-01 03:49:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.59 Mbit/s
95th percentile per-packet one-way delay: 47.999 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 9.59 Mbit/s
95th percentile per-packet one-way delay: 47.999 ms
Loss rate: 0.34%
```
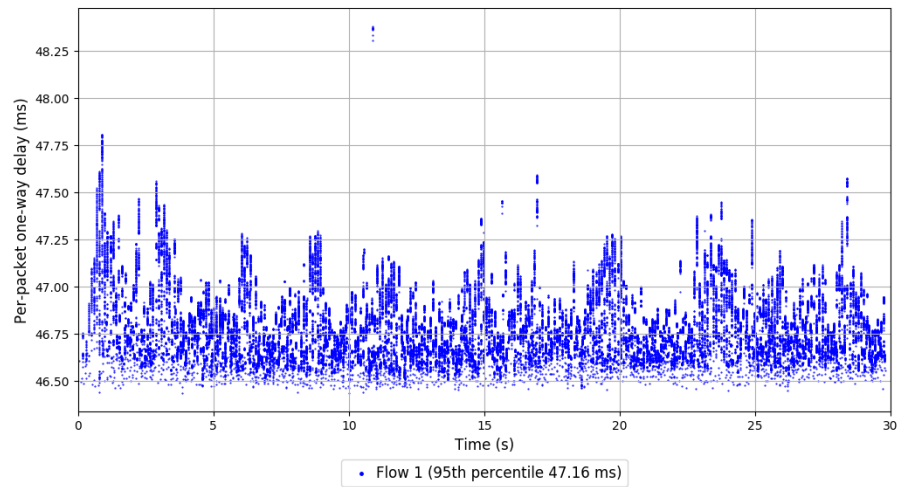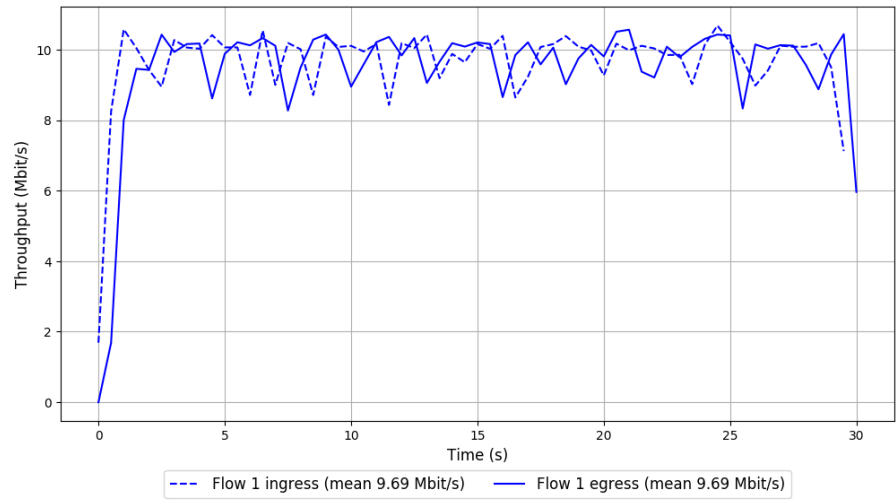
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-12-01 00:36:44
End at: 2018-12-01 00:37:14
Local clock offset: -0.039 ms
Remote clock offset: -0.057 ms


# Below is generated by plot.py at 2018-12-01 03:49:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.69 Mbit/s
95th percentile per-packet one-way delay: 47.162 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 9.69 Mbit/s
95th percentile per-packet one-way delay: 47.162 ms
Loss rate: 0.39%
```
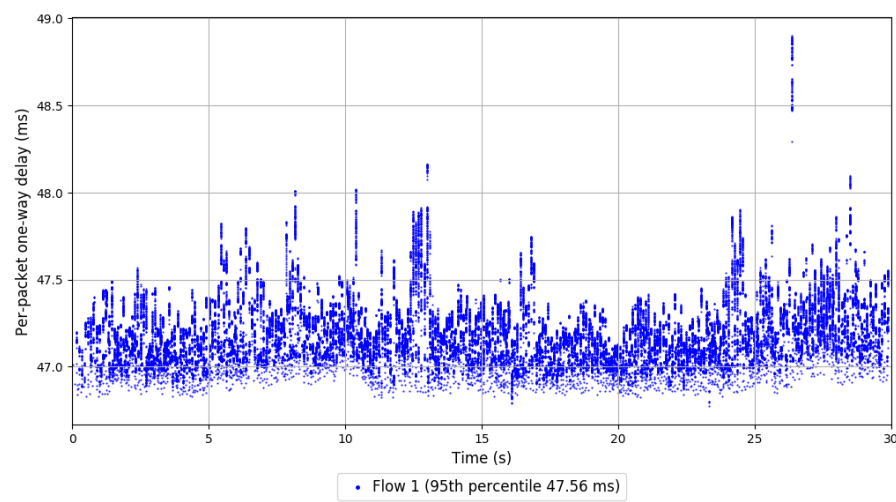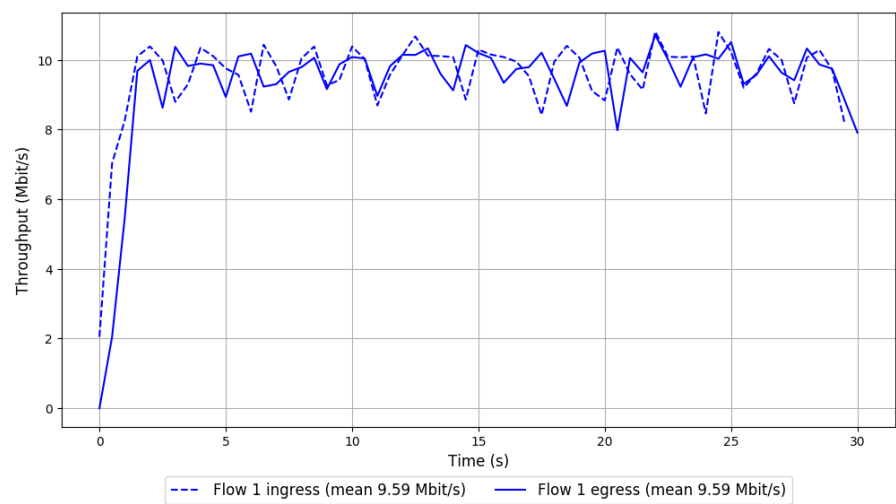
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-12-01 01:04:51
End at: 2018-12-01 01:05:21
Local clock offset: -0.537 ms
Remote clock offset: -0.129 ms


# Below is generated by plot.py at 2018-12-01 03:49:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.59 Mbit/s
95th percentile per-packet one-way delay: 47.561 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 9.59 Mbit/s
95th percentile per-packet one-way delay: 47.561 ms
Loss rate: 0.34%
```

Run 3: Report of Sprout — Data Link

Flow 1 ingress (mean 9.59 Mbit/s)   Flow 1 egress (mean 9.59 Mbit/s)
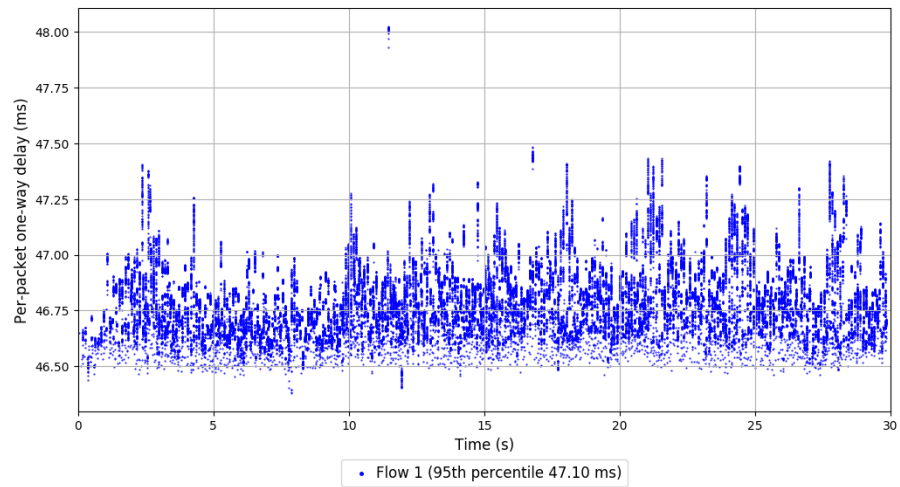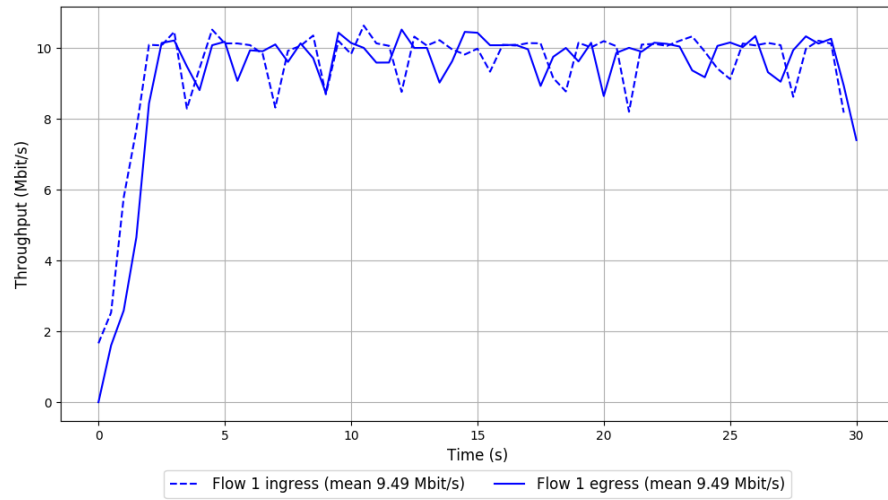

Flow 1 (95th percentile 47.56 ms)

```
Run 4: Statistics of Sprout

Start at: 2018-12-01 01:32:42
End at: 2018-12-01 01:33:12
Local clock offset: -0.129 ms
Remote clock offset: -0.129 ms


# Below is generated by plot.py at 2018-12-01 03:49:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.49 Mbit/s
95th percentile per-packet one-way delay: 47.104 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 9.49 Mbit/s
95th percentile per-packet one-way delay: 47.104 ms
Loss rate: 0.36%
```

Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-12-01 02:00:45
End at: 2018-12-01 02:01:15
Local clock offset: -0.029 ms
Remote clock offset: -0.08 ms


# Below is generated by plot.py at 2018-12-01 03:49:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.48 Mbit/s
95th percentile per-packet one-way delay: 47.904 ms
Loss rate: 0.35%
-- Flow 1:
Average throughput: 9.48 Mbit/s
95th percentile per-packet one-way delay: 47.904 ms
Loss rate: 0.35%
```
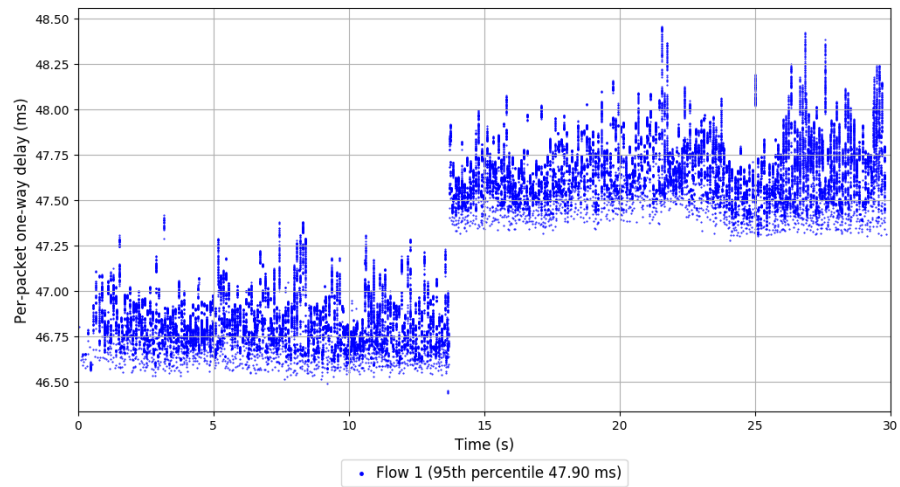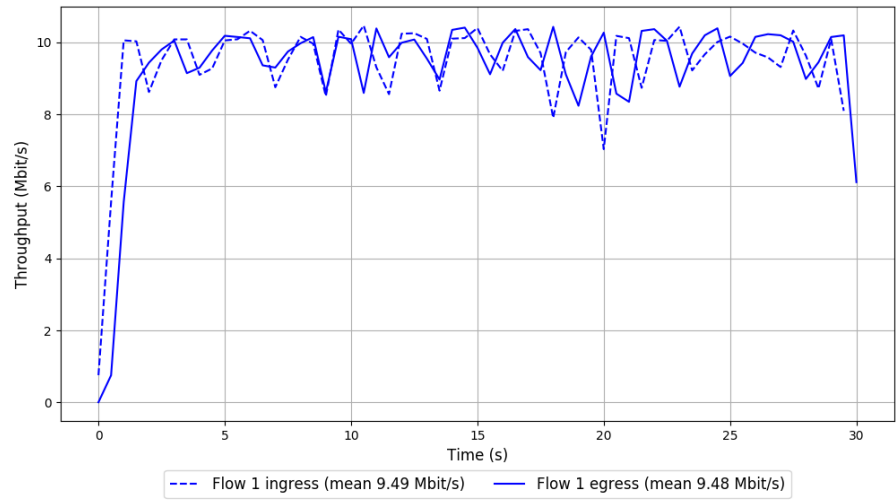
Run 5: Report of Sprout — Data Link

Flow 1 ingress (mean 9.49 Mbit/s)   Flow 1 egress (mean 9.48 Mbit/s)

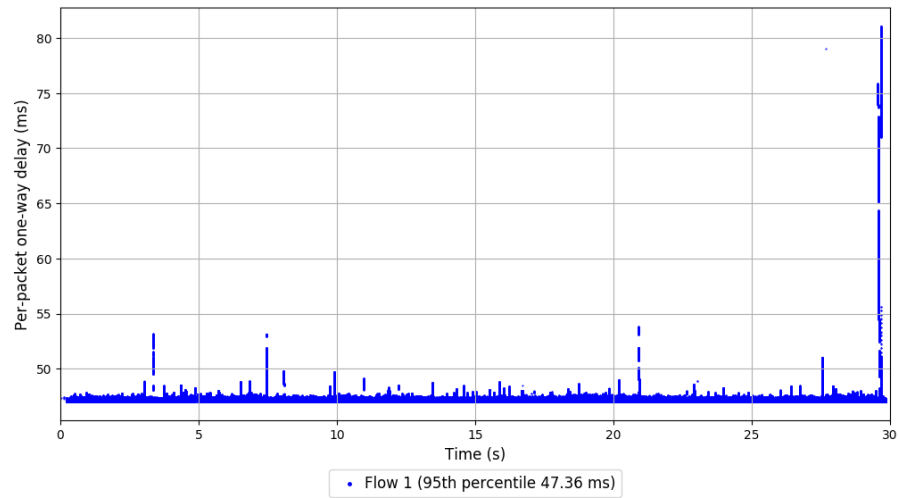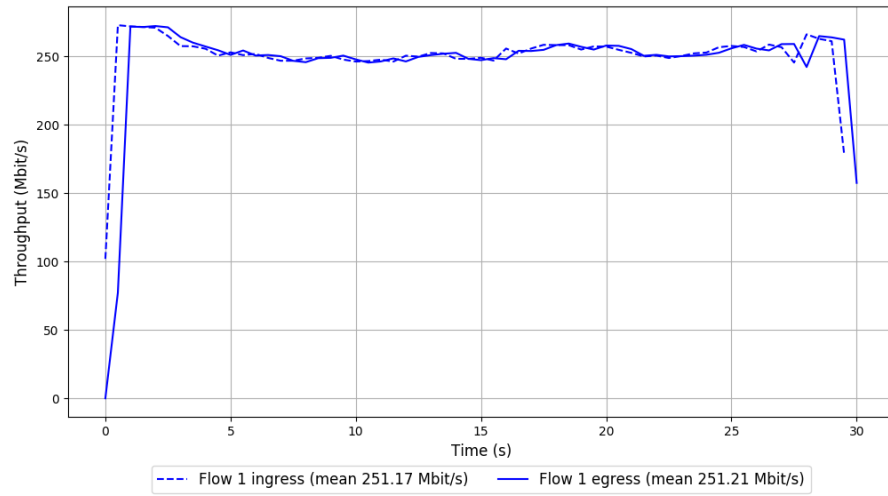Flow 1 (95th percentile 47.90 ms)

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

Start at: 2018-12-01 00:11:08
End at: 2018-12-01 00:11:38
Local clock offset: -0.099 ms
Remote clock offset: -0.09 ms


# Below is generated by plot.py at 2018-12-01 03:53:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 251.21 Mbit/s
95th percentile per-packet one-way delay: 47.364 ms
Loss rate: 0.30%
-- Flow 1:
Average throughput: 251.21 Mbit/s
95th percentile per-packet one-way delay: 47.364 ms
Loss rate: 0.30%
```

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

Flow 1 ingress (mean 251.17 Mbit/s)   Flow 1 egress (mean 251.21 Mbit/s)
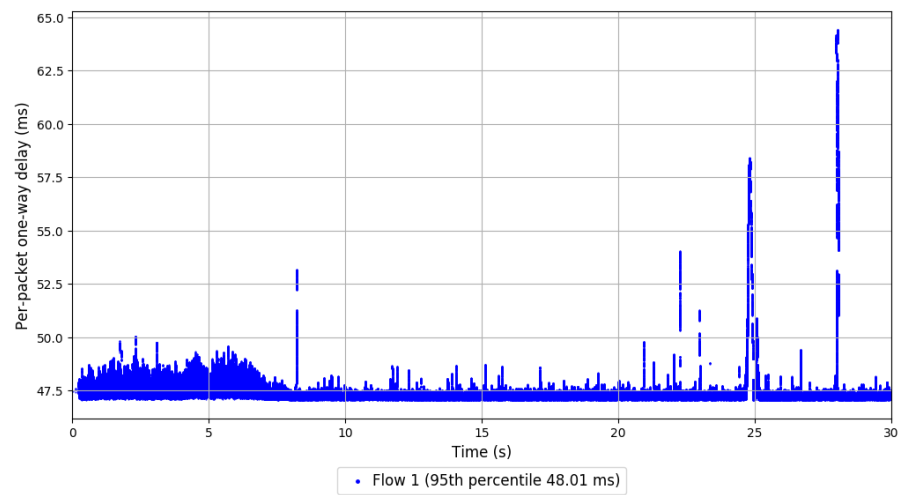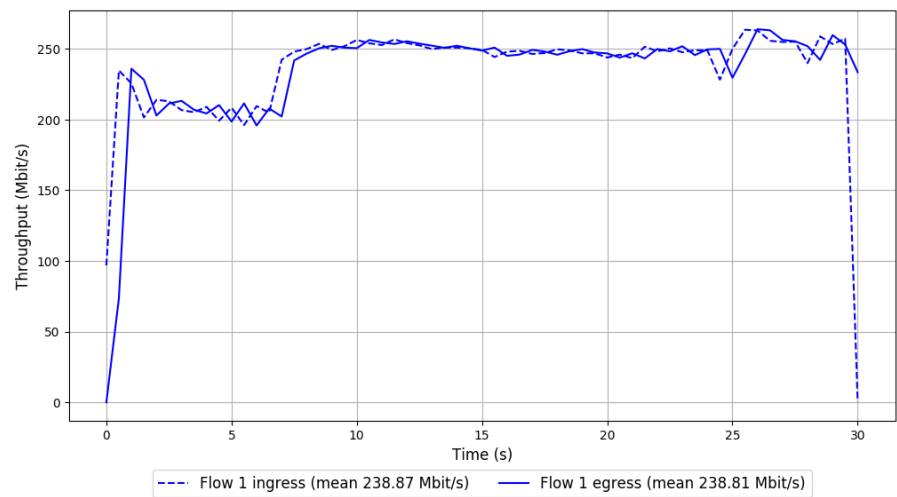

Flow 1 (95th percentile 47.36 ms)

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

Start at: 2018-12-01 00:39:25
End at: 2018-12-01 00:39:55
Local clock offset: -0.077 ms
Remote clock offset: -0.008 ms


# Below is generated by plot.py at 2018-12-01 03:53:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 238.81 Mbit/s
95th percentile per-packet one-way delay: 48.010 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 238.81 Mbit/s
95th percentile per-packet one-way delay: 48.010 ms
Loss rate: 0.34%
```

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

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

Start at: 2018-12-01 01:07:37
End at: 2018-12-01 01:08:07
Local clock offset: -0.203 ms
Remote clock offset: -0.14 ms


# Below is generated by plot.py at 2018-12-01 03:53:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 249.38 Mbit/s
95th percentile per-packet one-way delay: 47.113 ms
Loss rate: 0.31%
-- Flow 1:
Average throughput: 249.38 Mbit/s
95th percentile per-packet one-way delay: 47.113 ms
Loss rate: 0.31%
```
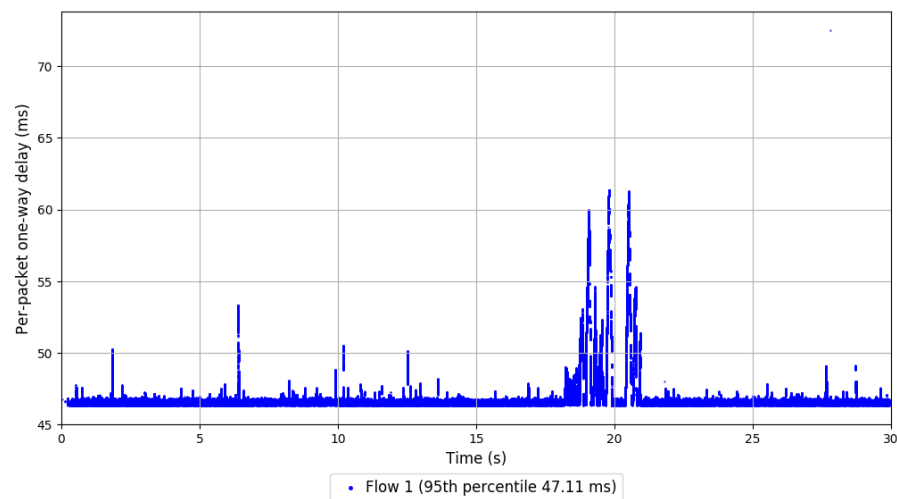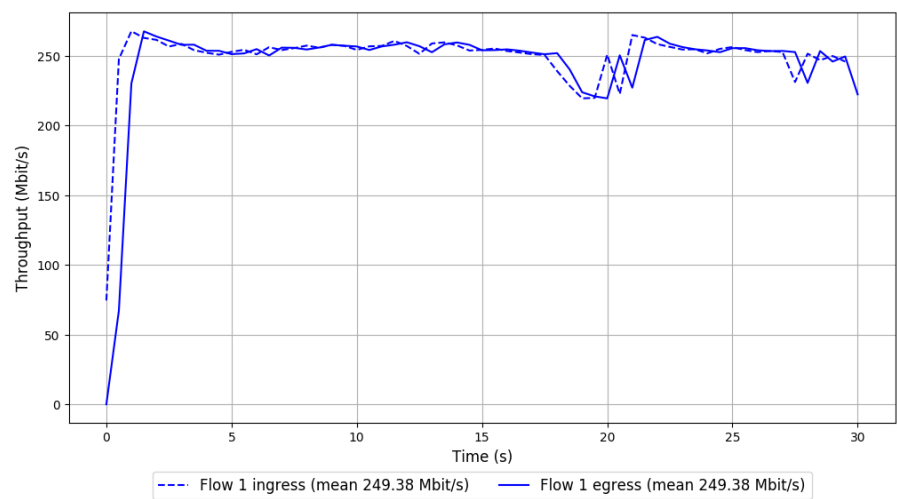
Run 3: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 249.38 Mbit/s)   Flow 1 egress (mean 249.38 Mbit/s)

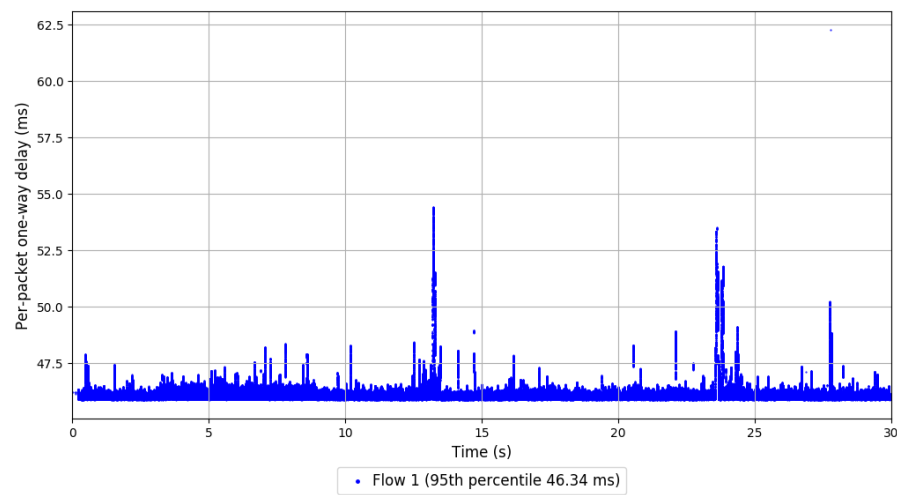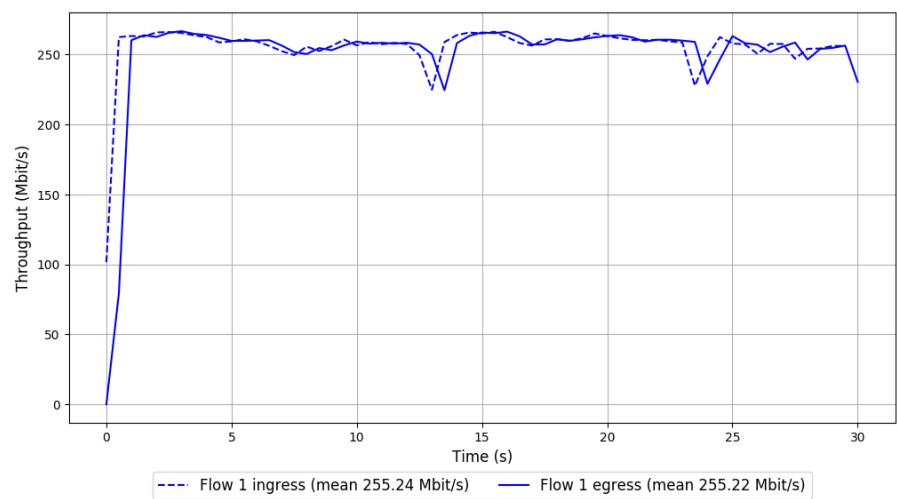

• Flow 1 (95th percentile 47.11 ms)

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

Start at: 2018-12-01 01:35:29
End at: 2018-12-01 01:35:59
Local clock offset: -0.466 ms
Remote clock offset: -0.058 ms


# Below is generated by plot.py at 2018-12-01 03:54:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 255.22 Mbit/s
95th percentile per-packet one-way delay: 46.336 ms
Loss rate: 0.32%
-- Flow 1:
Average throughput: 255.22 Mbit/s
95th percentile per-packet one-way delay: 46.336 ms
Loss rate: 0.32%
```

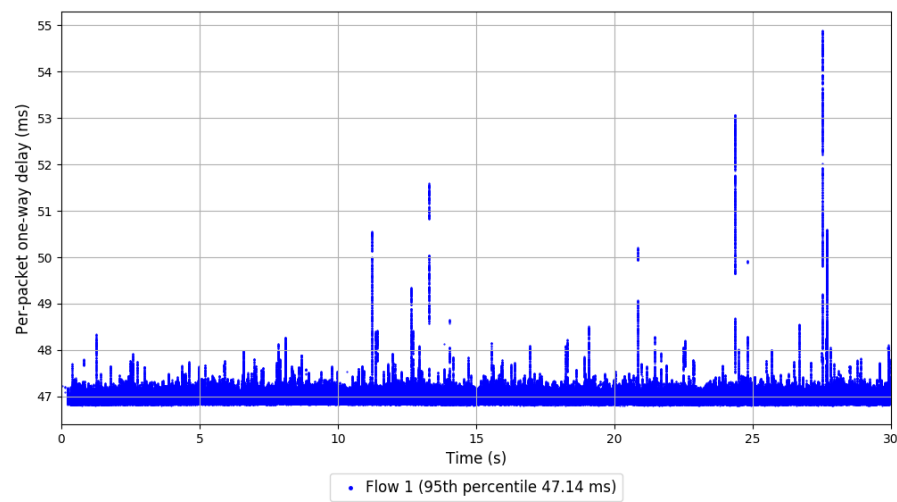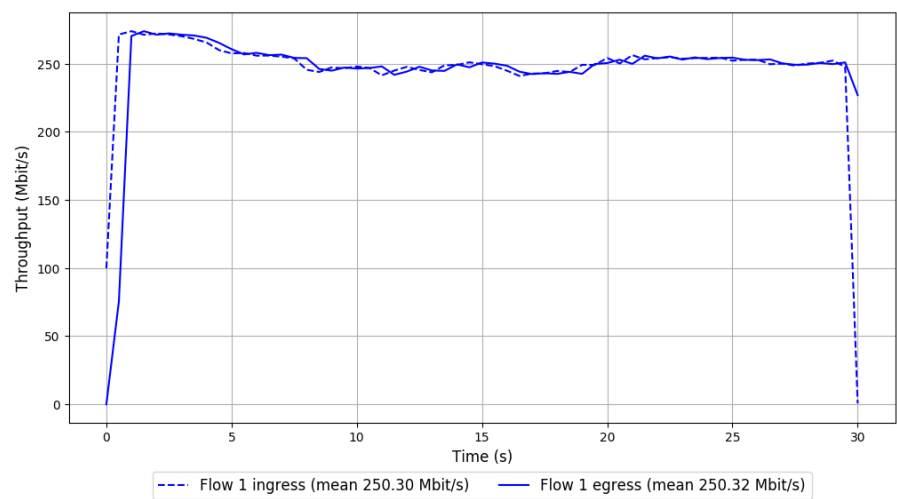# Run 4: Report of TaoVA-100x — Data Link

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

Start at: 2018-12-01 02:03:37
End at: 2018-12-01 02:04:07
Local clock offset: -0.435 ms
Remote clock offset: -0.077 ms


# Below is generated by plot.py at 2018-12-01 03:55:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 250.32 Mbit/s
95th percentile per-packet one-way delay: 47.137 ms
Loss rate: 0.31%
-- Flow 1:
Average throughput: 250.32 Mbit/s
95th percentile per-packet one-way delay: 47.137 ms
Loss rate: 0.31%
```

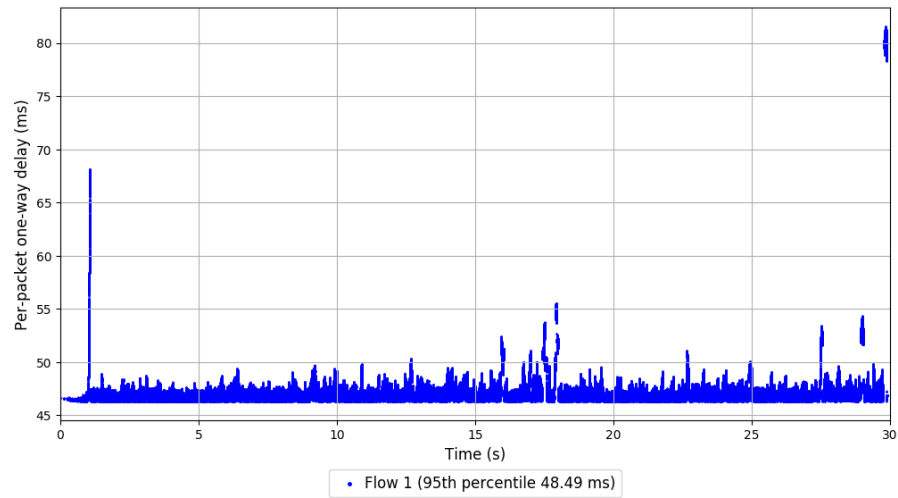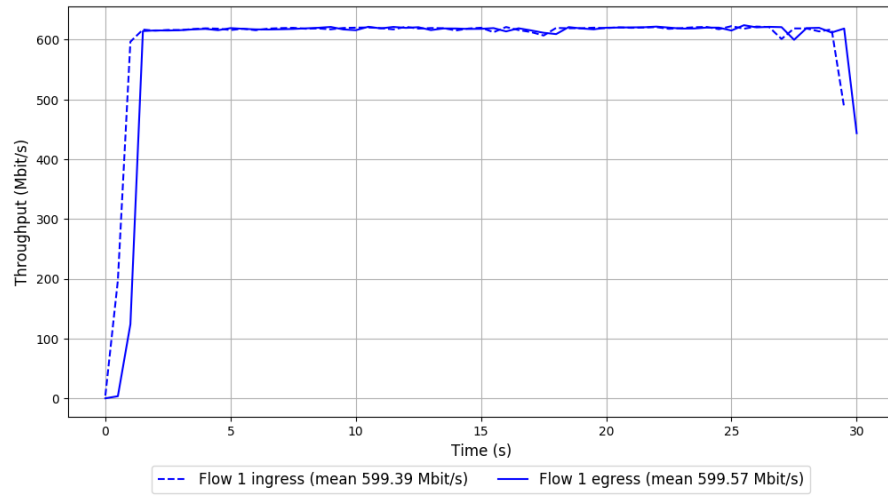Run 5: Report of TaoVA-100x — Data Link

```
Run 1: Statistics of TCP Vegas

Start at: 2018-11-30 23:56:04
End at: 2018-11-30 23:56:34
Local clock offset: -0.066 ms
Remote clock offset: -0.116 ms


# Below is generated by plot.py at 2018-12-01 04:00:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 599.57 Mbit/s
95th percentile per-packet one-way delay: 48.492 ms
Loss rate: 0.28%
-- Flow 1:
Average throughput: 599.57 Mbit/s
95th percentile per-packet one-way delay: 48.492 ms
Loss rate: 0.28%
```

Run 1: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 599.39 Mbit/s) ---- Flow 1 egress (mean 599.57 Mbit/s)
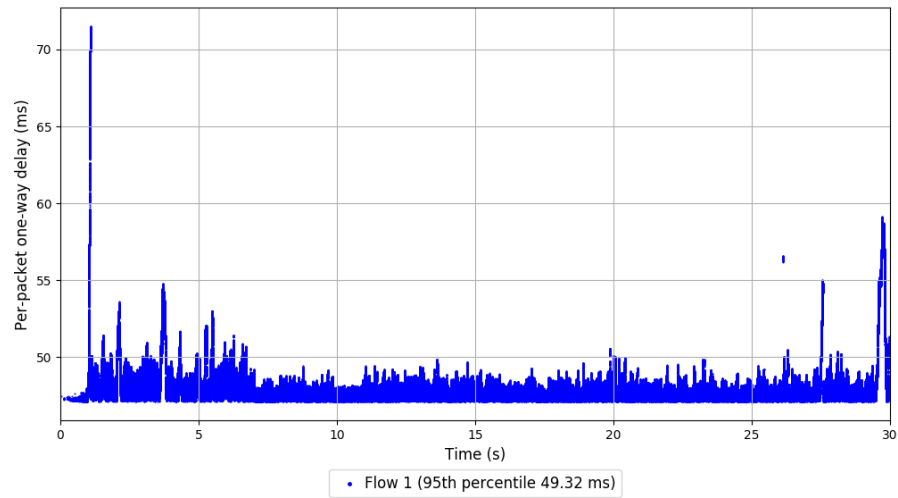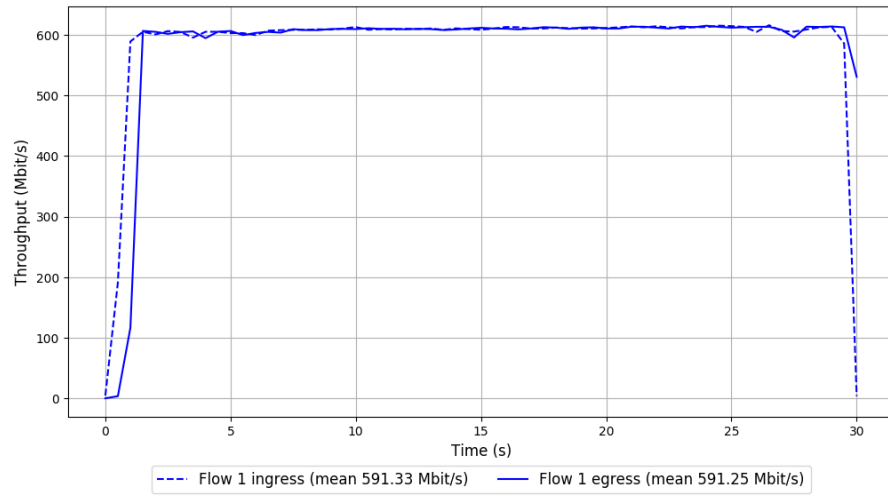
Flow 1 (95th percentile 48.49 ms)

```
Run 2: Statistics of TCP Vegas

Start at: 2018-12-01 00:24:04
End at: 2018-12-01 00:24:34
Local clock offset: -0.076 ms
Remote clock offset: -0.062 ms


# Below is generated by plot.py at 2018-12-01 04:01:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 591.25 Mbit/s
95th percentile per-packet one-way delay: 49.319 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 591.25 Mbit/s
95th percentile per-packet one-way delay: 49.319 ms
Loss rate: 0.33%
```

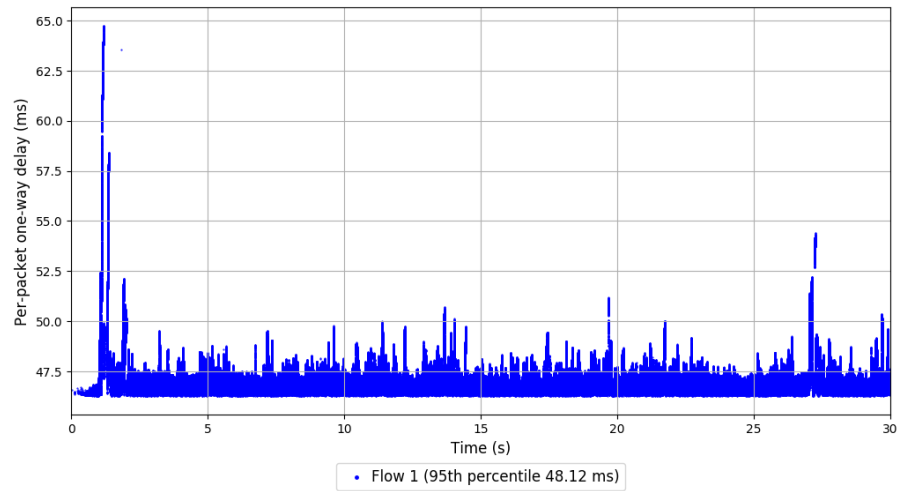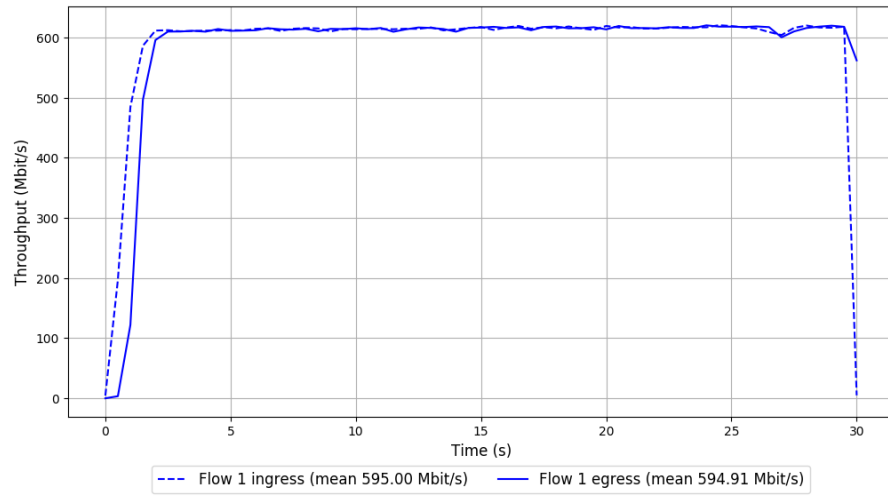Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-12-01 00:52:40
End at: 2018-12-01 00:53:10
Local clock offset: -0.114 ms
Remote clock offset: -0.086 ms


# Below is generated by plot.py at 2018-12-01 04:02:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 594.91 Mbit/s
95th percentile per-packet one-way delay: 48.115 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 594.91 Mbit/s
95th percentile per-packet one-way delay: 48.115 ms
Loss rate: 0.33%
```

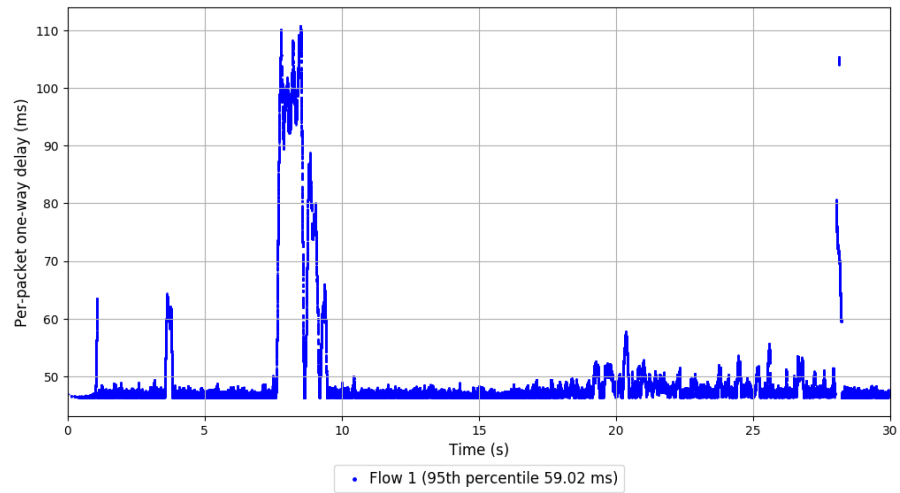## Run 3: Report of TCP Vegas — Data Link

```
Run 4: Statistics of TCP Vegas

Start at: 2018-12-01 01:20:32
End at: 2018-12-01 01:21:02
Local clock offset: -0.215 ms
Remote clock offset: -0.112 ms


# Below is generated by plot.py at 2018-12-01 04:04:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 582.43 Mbit/s
95th percentile per-packet one-way delay: 59.020 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 582.43 Mbit/s
95th percentile per-packet one-way delay: 59.020 ms
Loss rate: 0.33%
```

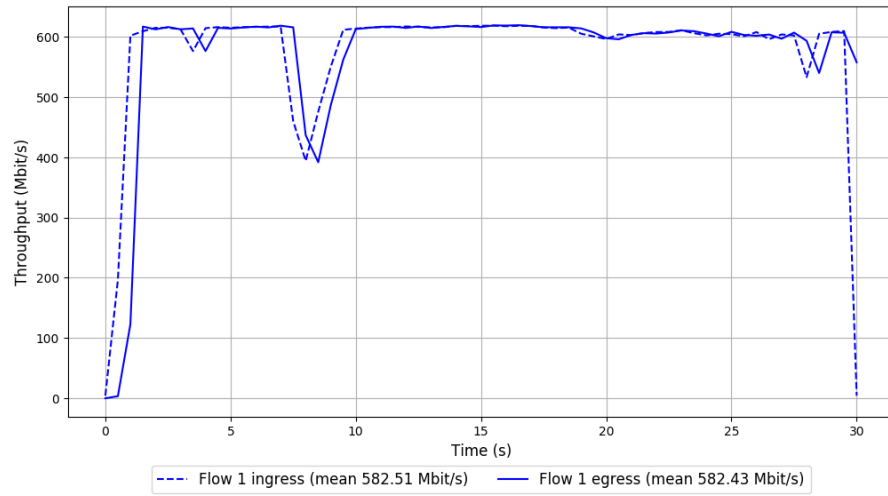Run 4: Report of TCP Vegas — Data Link

```
Run 5: Statistics of TCP Vegas

Start at: 2018-12-01 01:48:32
End at: 2018-12-01 01:49:02
Local clock offset: -0.108 ms
Remote clock offset: -0.054 ms


# Below is generated by plot.py at 2018-12-01 04:04:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 566.76 Mbit/s
95th percentile per-packet one-way delay: 59.758 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 566.76 Mbit/s
95th percentile per-packet one-way delay: 59.758 ms
Loss rate: 0.17%
```
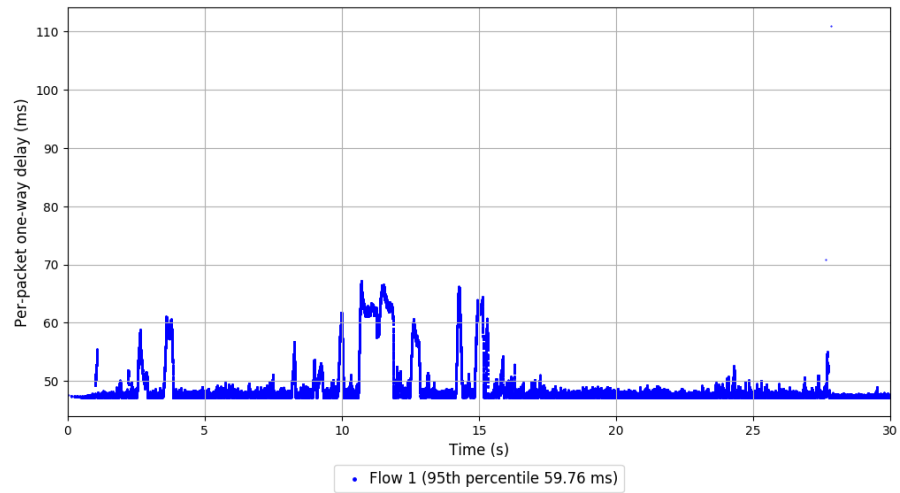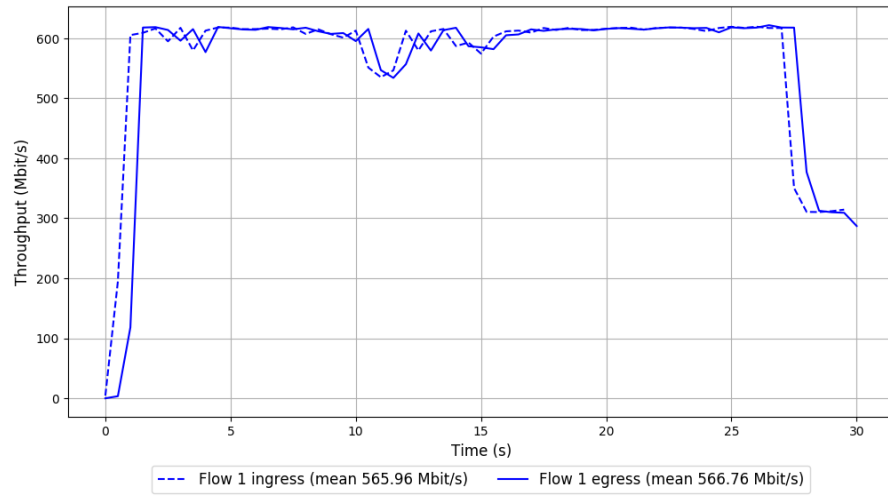
Run 5: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 565.96 Mbit/s) Flow 1 egress (mean 566.76 Mbit/s)
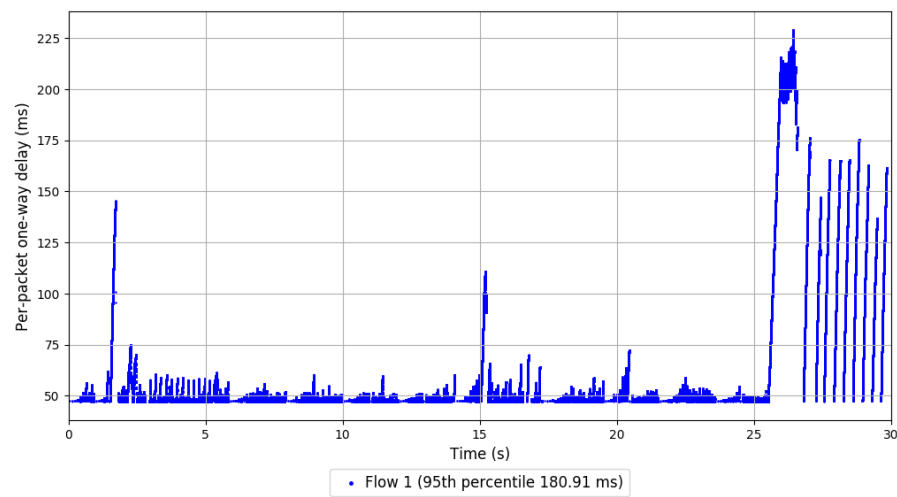

Flow 1 (95th percentile 59.76 ms)

```
Run 1: Statistics of Verus

Start at: 2018-11-30 23:53:34
End at: 2018-11-30 23:54:04
Local clock offset: -0.122 ms
Remote clock offset: -0.104 ms


# Below is generated by plot.py at 2018-12-01 04:04:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 155.72 Mbit/s
95th percentile per-packet one-way delay: 180.915 ms
Loss rate: 4.00%
-- Flow 1:
Average throughput: 155.72 Mbit/s
95th percentile per-packet one-way delay: 180.915 ms
Loss rate: 4.00%
```
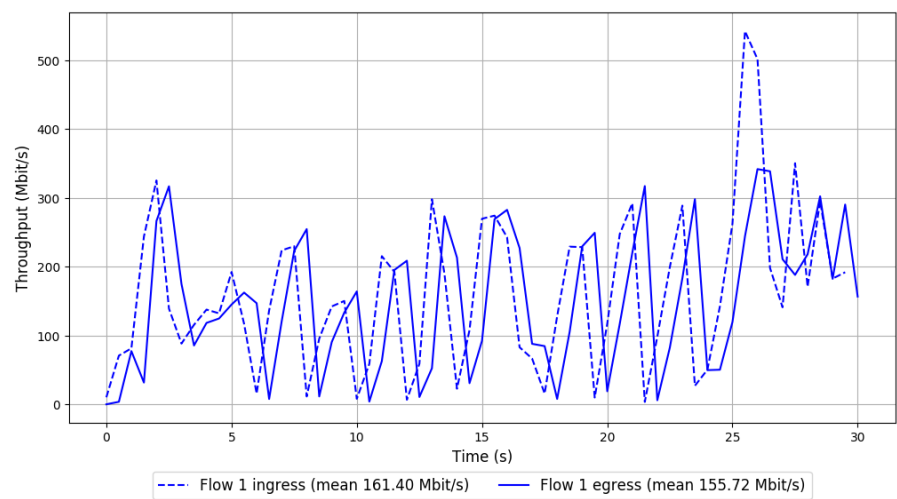
Run 1: Report of Verus — Data Link

Flow 1 ingress (mean 161.40 Mbit/s)   Flow 1 egress (mean 155.72 Mbit/s)
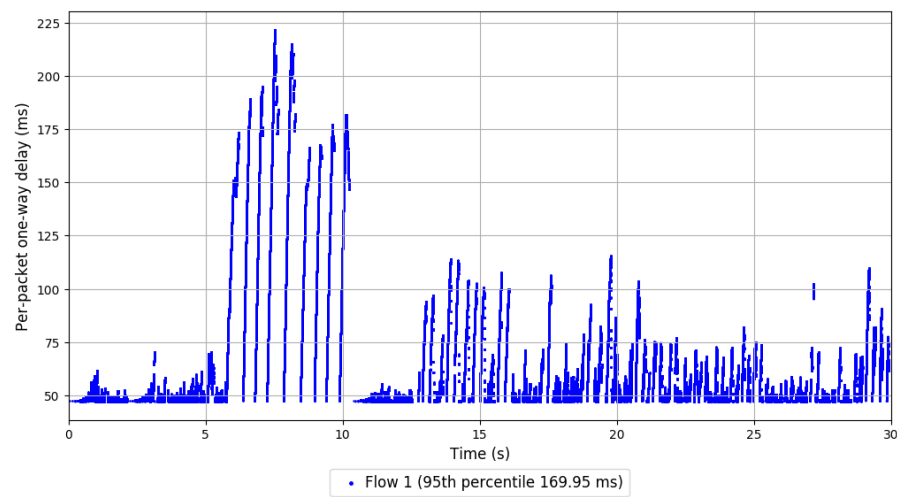

Flow 1 (95th percentile 180.91 ms)

```
Run 2: Statistics of Verus

Start at: 2018-12-01 00:21:11
End at: 2018-12-01 00:21:41
Local clock offset: -0.118 ms
Remote clock offset: -0.091 ms


# Below is generated by plot.py at 2018-12-01 04:04:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 193.02 Mbit/s
95th percentile per-packet one-way delay: 169.953 ms
Loss rate: 2.36%
-- Flow 1:
Average throughput: 193.02 Mbit/s
95th percentile per-packet one-way delay: 169.953 ms
Loss rate: 2.36%
```
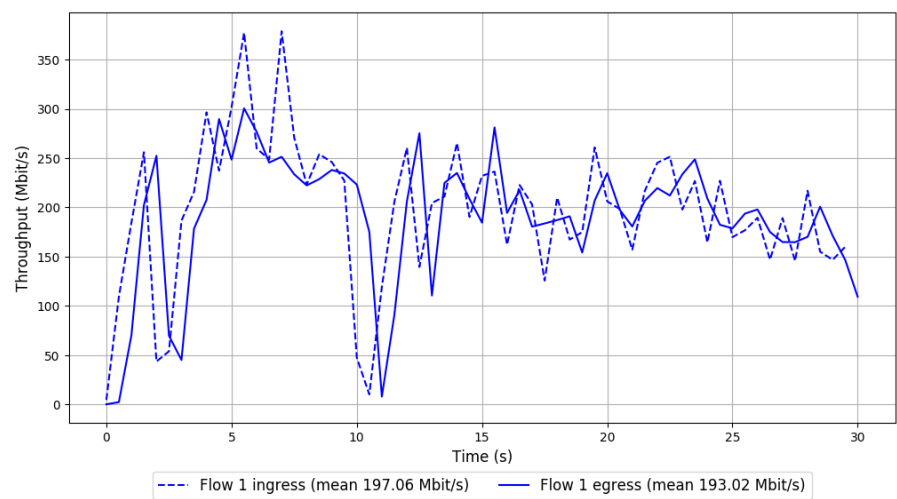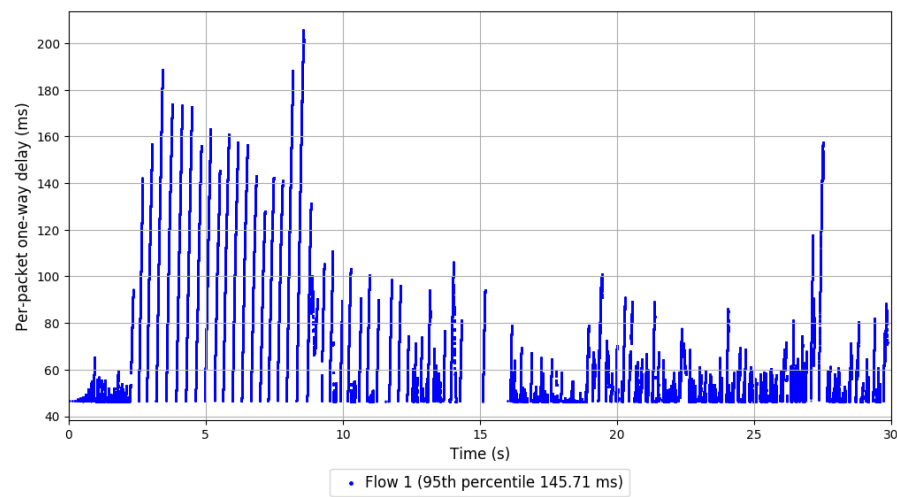
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-12-01 00:49:49
End at: 2018-12-01 00:50:19
Local clock offset: -0.081 ms
Remote clock offset: 0.002 ms


# Below is generated by plot.py at 2018-12-01 04:04:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 173.29 Mbit/s
95th percentile per-packet one-way delay: 145.714 ms
Loss rate: 0.56%
-- Flow 1:
Average throughput: 173.29 Mbit/s
95th percentile per-packet one-way delay: 145.714 ms
Loss rate: 0.56%
```
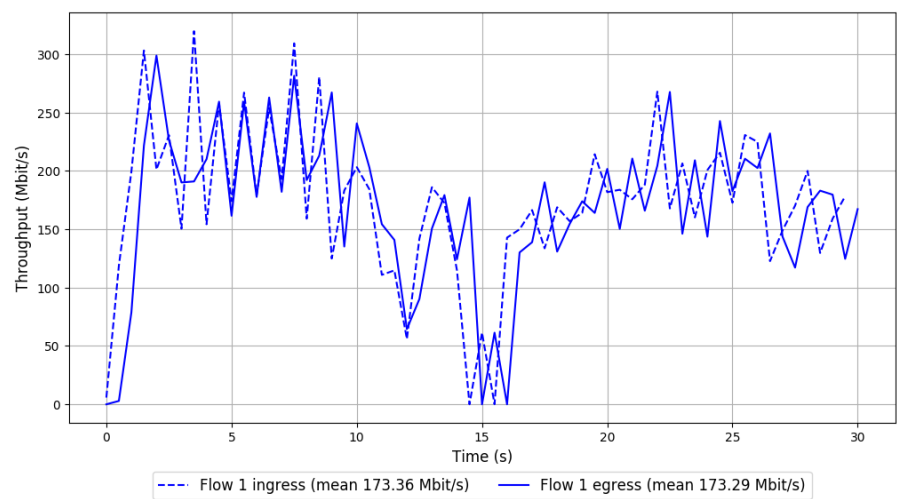
Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2018-12-01 01:17:41
End at: 2018-12-01 01:18:11
Local clock offset: -0.207 ms
Remote clock offset: -0.147 ms


# Below is generated by plot.py at 2018-12-01 04:05:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 181.44 Mbit/s
95th percentile per-packet one-way delay: 90.743 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 181.44 Mbit/s
95th percentile per-packet one-way delay: 90.743 ms
Loss rate: 0.00%
```
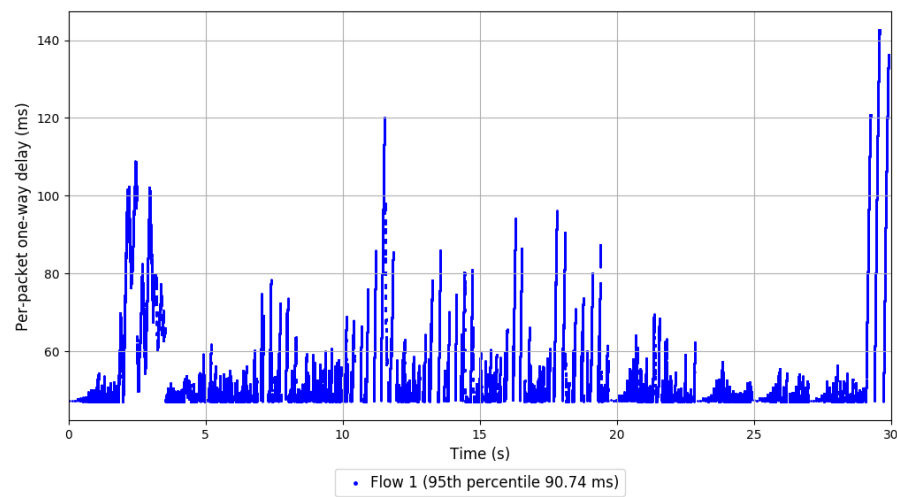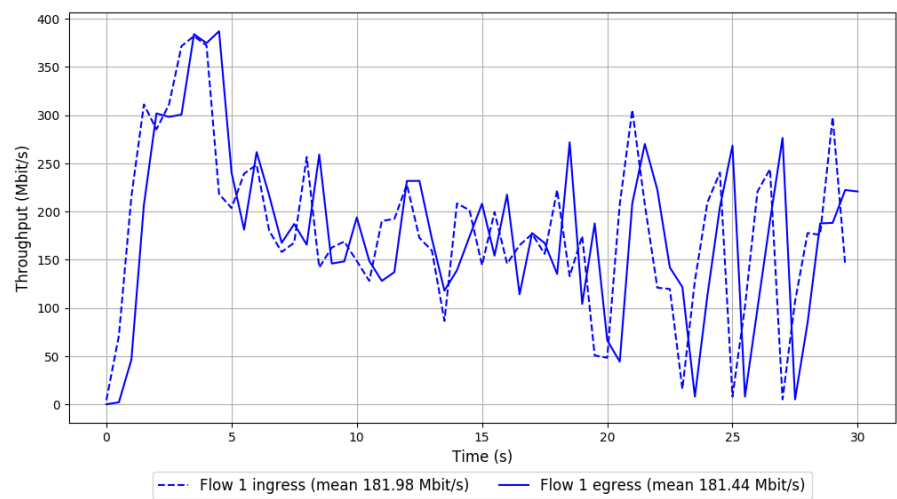
Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2018-12-01 01:45:40
End at: 2018-12-01 01:46:10
Local clock offset: 0.262 ms
Remote clock offset: 0.012 ms


# Below is generated by plot.py at 2018-12-01 04:06:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 175.73 Mbit/s
95th percentile per-packet one-way delay: 129.373 ms
Loss rate: 0.22%
-- Flow 1:
Average throughput: 175.73 Mbit/s
95th percentile per-packet one-way delay: 129.373 ms
Loss rate: 0.22%
```
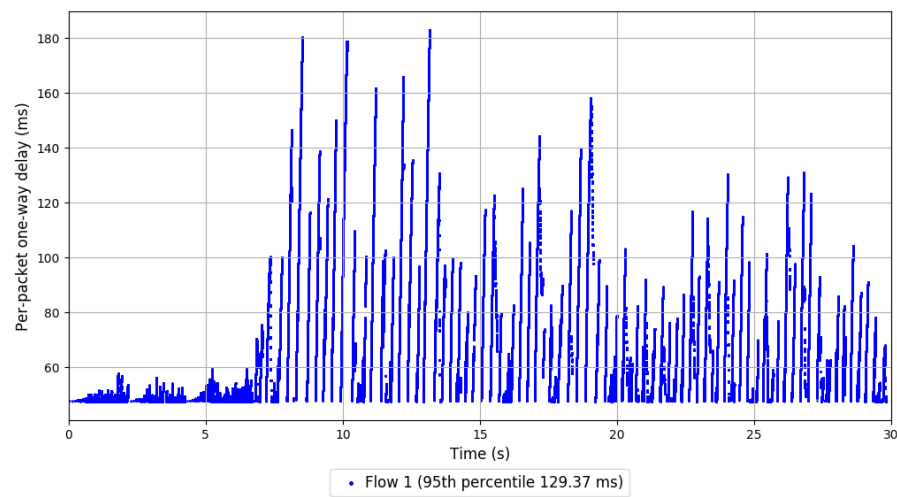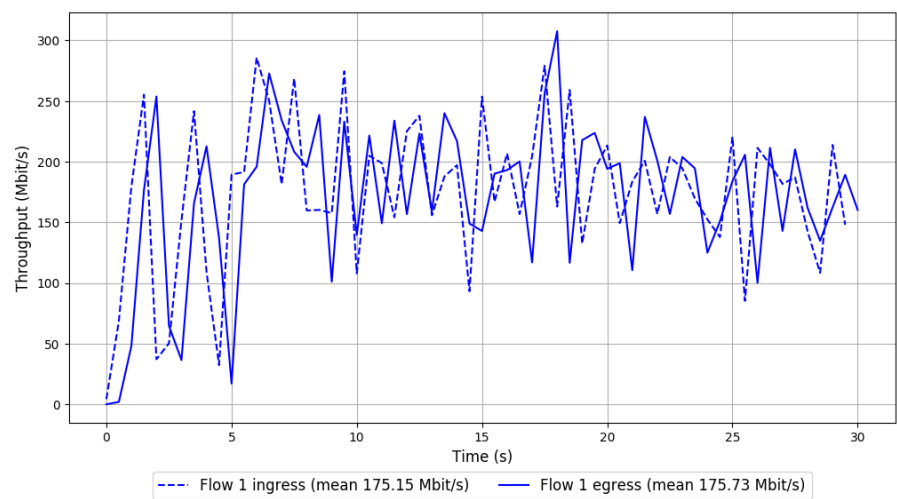
Run 5: Report of Verus — Data Link

Flow 1 ingress (mean 175.15 Mbit/s) — Flow 1 egress (mean 175.73 Mbit/s)

• Flow 1 (95th percentile 129.37 ms)

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-12-01 00:05:33
End at: 2018-12-01 00:06:03
Local clock offset: 0.264 ms
Remote clock offset: -0.093 ms


# Below is generated by plot.py at 2018-12-01 04:08:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 457.89 Mbit/s
95th percentile per-packet one-way delay: 48.285 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 457.89 Mbit/s
95th percentile per-packet one-way delay: 48.285 ms
Loss rate: 0.36%
```
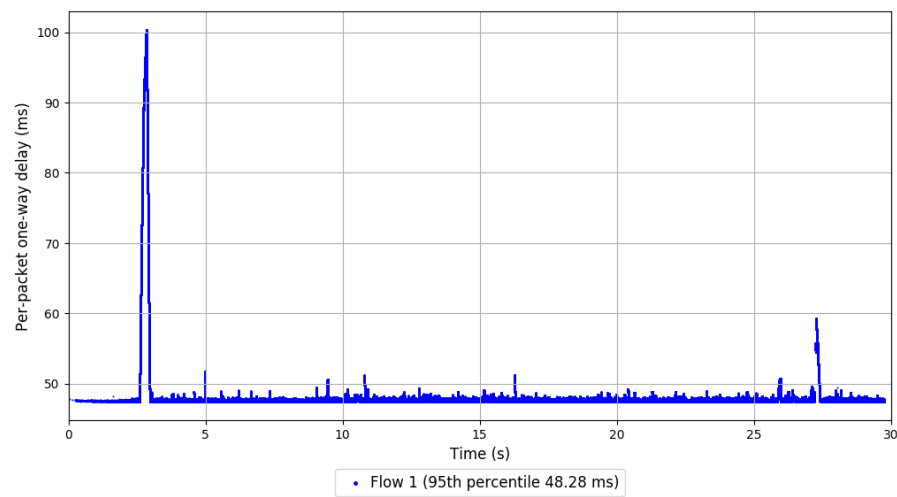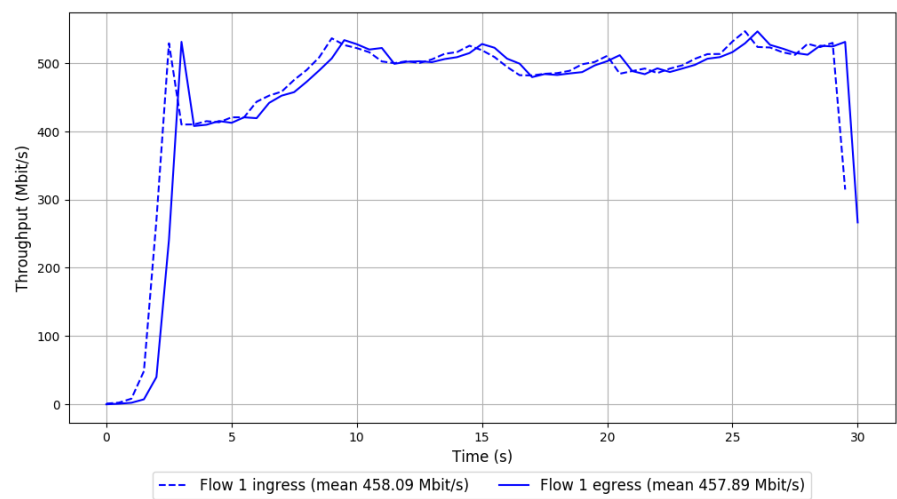
Run 1: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 458.09 Mbit/s)   Flow 1 egress (mean 457.89 Mbit/s)

Flow 1 (95th percentile 48.28 ms)

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-12-01 00:33:49
End at: 2018-12-01 00:34:19
Local clock offset: -0.058 ms
Remote clock offset: 0.008 ms


# Below is generated by plot.py at 2018-12-01 04:08:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 435.19 Mbit/s
95th percentile per-packet one-way delay: 54.234 ms
Loss rate: 0.29%
-- Flow 1:
Average throughput: 435.19 Mbit/s
95th percentile per-packet one-way delay: 54.234 ms
Loss rate: 0.29%
```
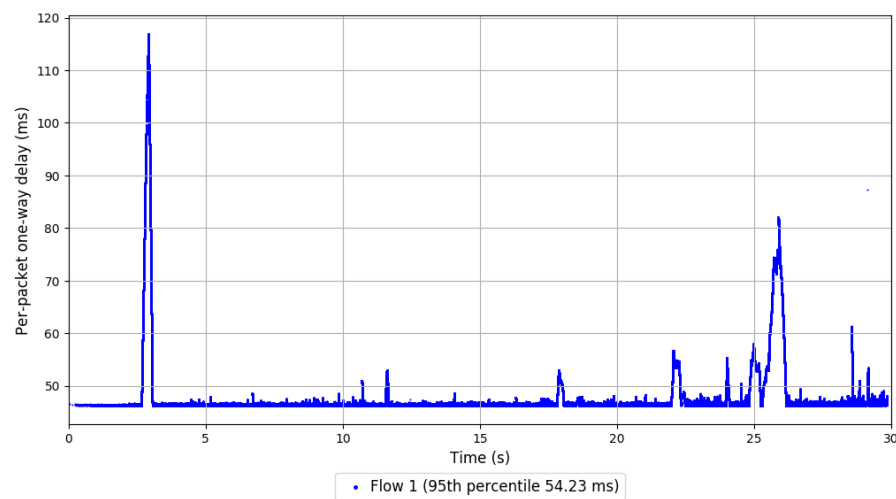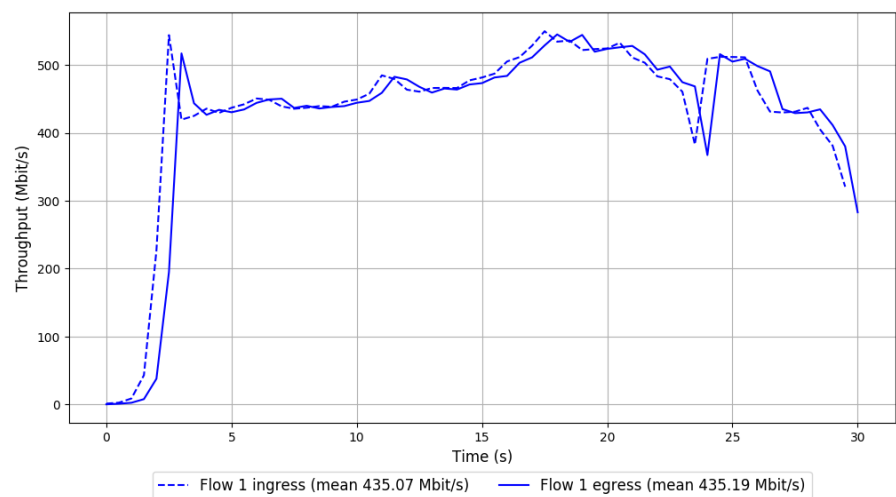
Run 2: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 435.07 Mbit/s) ——— Flow 1 egress (mean 435.19 Mbit/s)

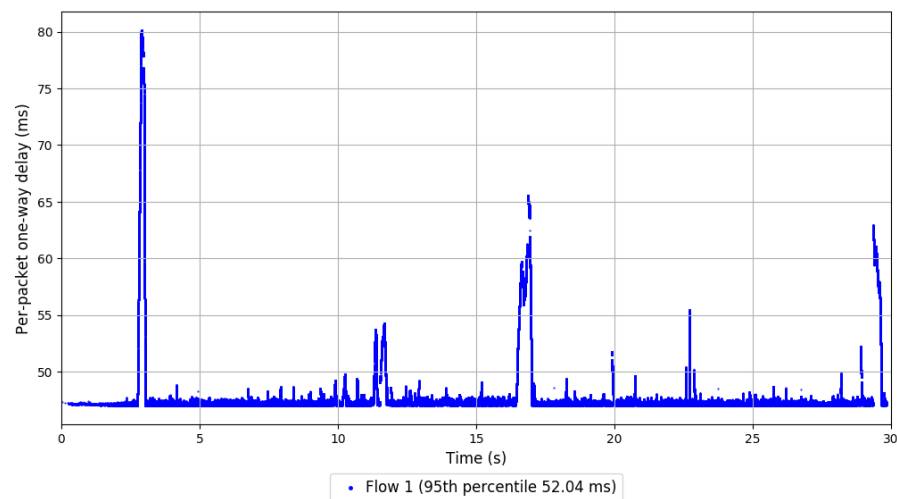

• Flow 1 (95th percentile 54.23 ms)

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-12-01 01:02:09
End at: 2018-12-01 01:02:39
Local clock offset: -0.198 ms
Remote clock offset: -0.132 ms


# Below is generated by plot.py at 2018-12-01 04:08:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 431.38 Mbit/s
95th percentile per-packet one-way delay: 52.040 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 431.38 Mbit/s
95th percentile per-packet one-way delay: 52.040 ms
Loss rate: 0.37%
```

Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 431.59 Mbit/s)   Flow 1 egress (mean 431.38 Mbit/s)
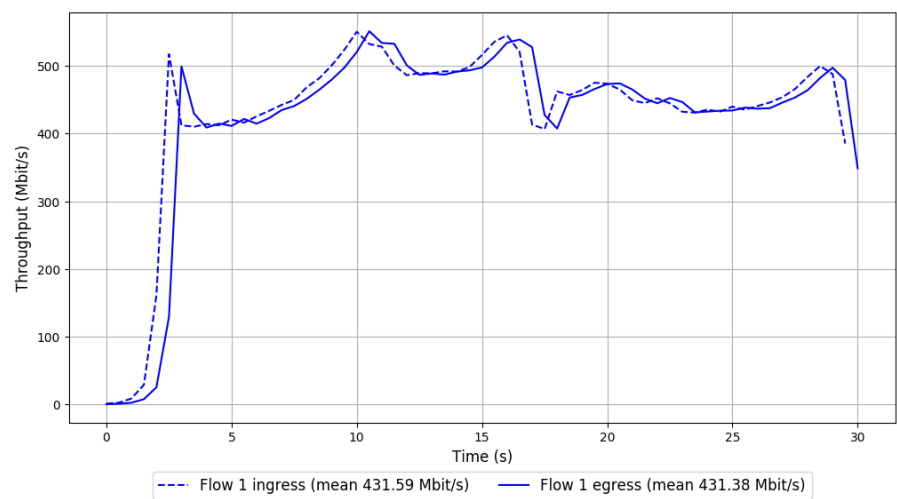

Flow 1 (95th percentile 52.04 ms)

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-12-01 01:30:04
End at: 2018-12-01 01:30:34
Local clock offset: -0.115 ms
Remote clock offset: -0.078 ms


# Below is generated by plot.py at 2018-12-01 04:08:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 360.80 Mbit/s
95th percentile per-packet one-way delay: 148.284 ms
Loss rate: 2.48%
-- Flow 1:
Average throughput: 360.80 Mbit/s
95th percentile per-packet one-way delay: 148.284 ms
Loss rate: 2.48%
```
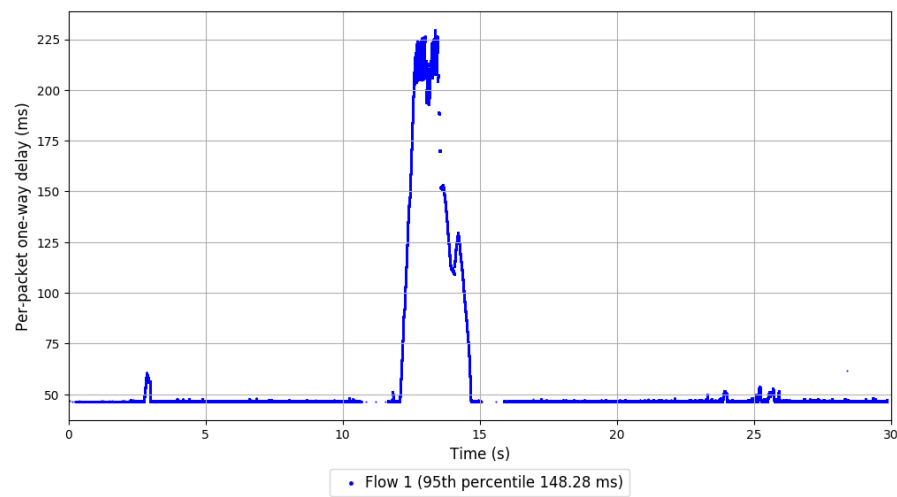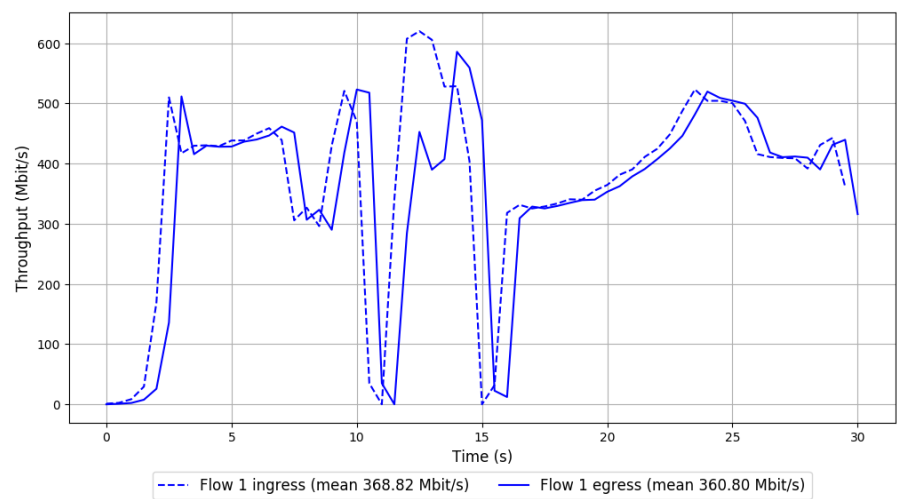
Run 4: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 368.82 Mbit/s) ----   Flow 1 egress (mean 360.80 Mbit/s) ——
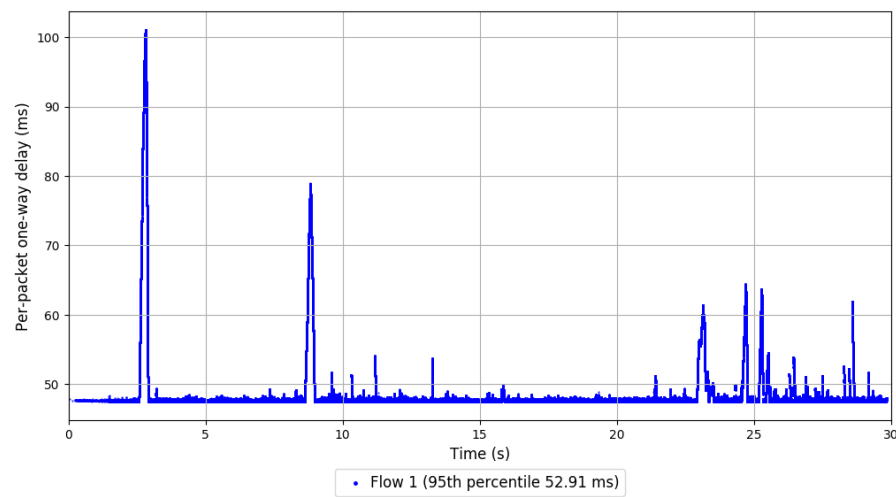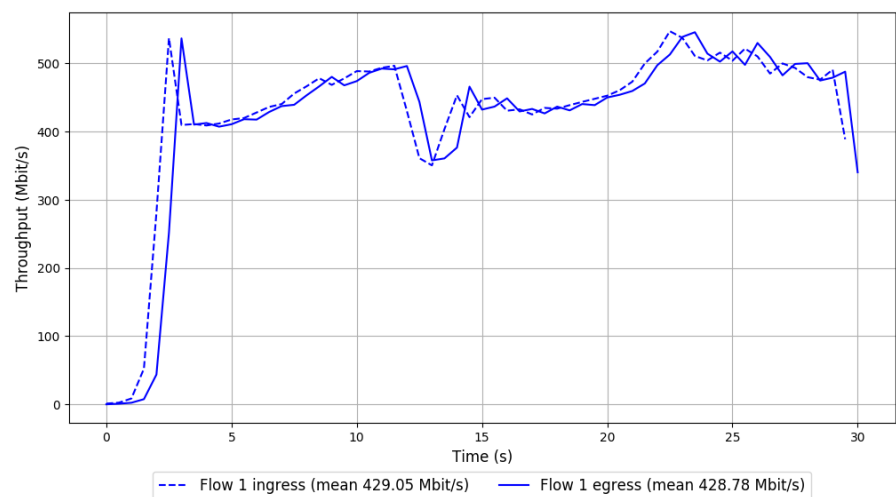

Flow 1 (95th percentile 148.28 ms)

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-12-01 01:58:02
End at: 2018-12-01 01:58:32
Local clock offset: 0.315 ms
Remote clock offset: -0.047 ms


# Below is generated by plot.py at 2018-12-01 04:08:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 428.78 Mbit/s
95th percentile per-packet one-way delay: 52.906 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 428.78 Mbit/s
95th percentile per-packet one-way delay: 52.906 ms
Loss rate: 0.38%
```

Run 5: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 429.05 Mbit/s) —— Flow 1 egress (mean 428.78 Mbit/s)

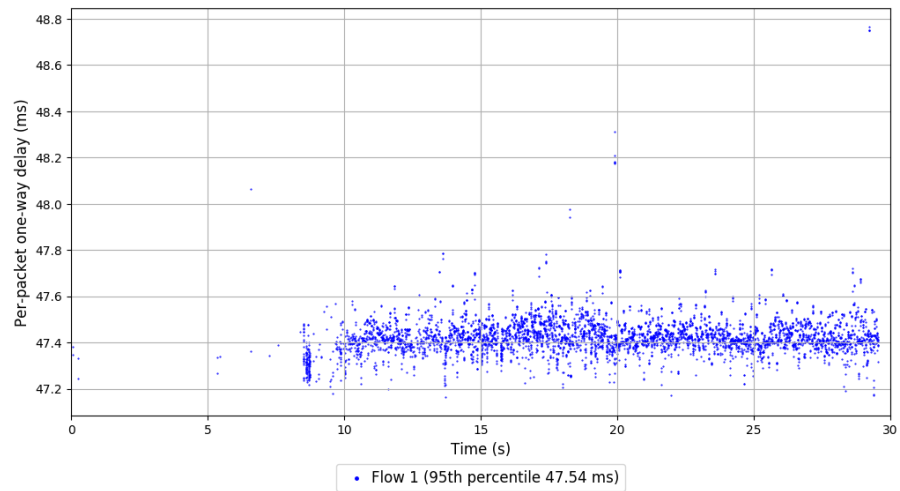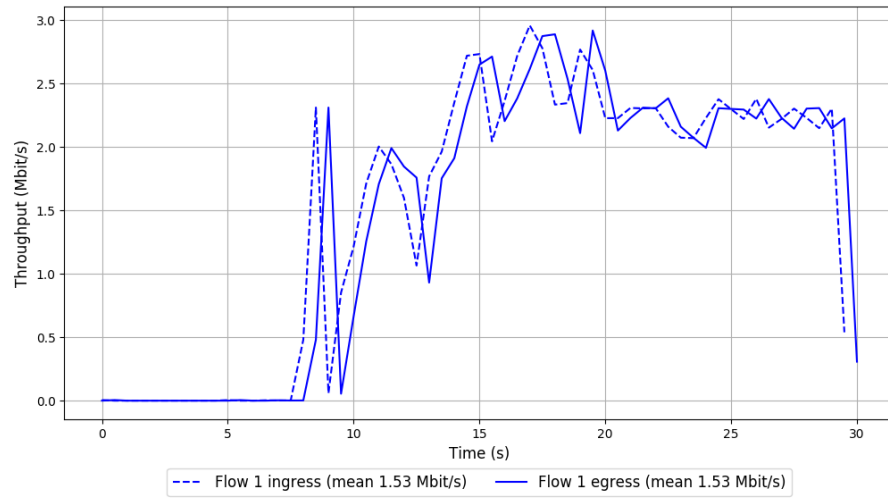

• Flow 1 (95th percentile 52.91 ms)

```
Run 1: Statistics of WebRTC media

Start at: 2018-12-01 00:17:16
End at: 2018-12-01 00:17:46
Local clock offset: -0.04 ms
Remote clock offset: -0.136 ms


# Below is generated by plot.py at 2018-12-01 04:08:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.53 Mbit/s
95th percentile per-packet one-way delay: 47.540 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 1.53 Mbit/s
95th percentile per-packet one-way delay: 47.540 ms
Loss rate: 0.51%
```

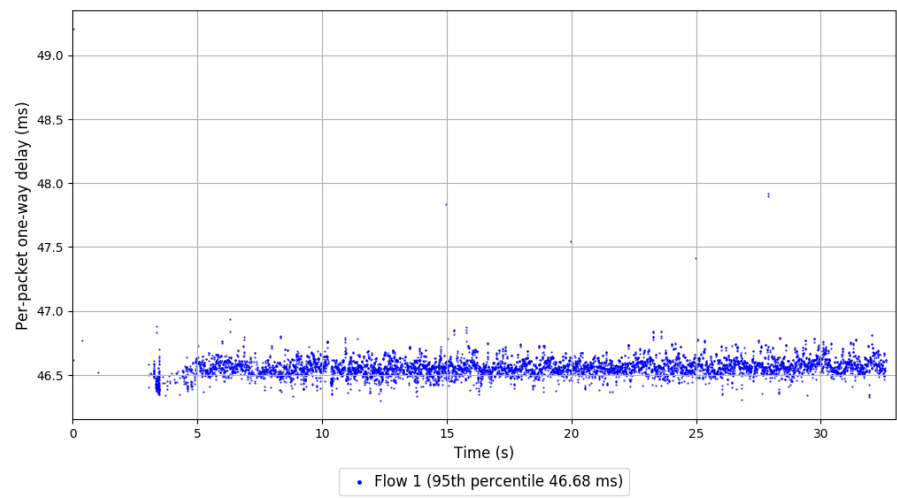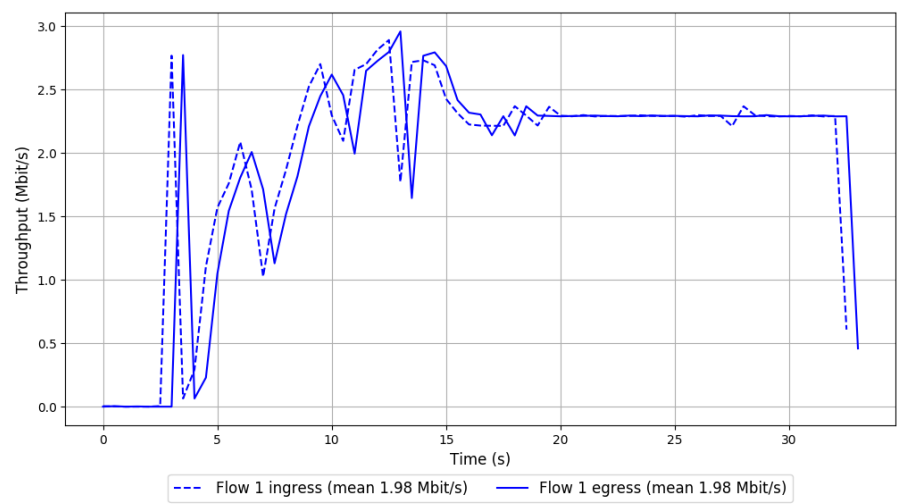Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-12-01 00:45:49
End at: 2018-12-01 00:46:19
Local clock offset: -0.042 ms
Remote clock offset: -0.035 ms


# Below is generated by plot.py at 2018-12-01 04:08:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.98 Mbit/s
95th percentile per-packet one-way delay: 46.676 ms
Loss rate: 0.29%
-- Flow 1:
Average throughput: 1.98 Mbit/s
95th percentile per-packet one-way delay: 46.676 ms
Loss rate: 0.29%
```

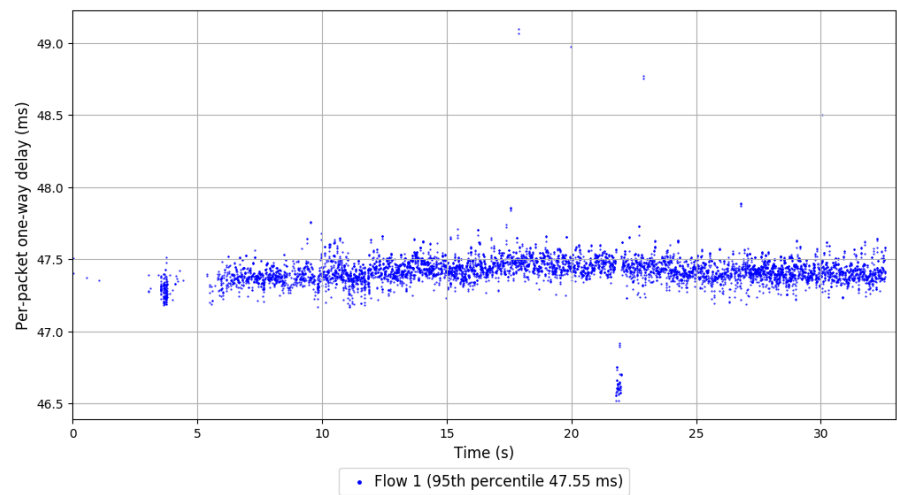Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-12-01 01:13:46
End at: 2018-12-01 01:14:16
Local clock offset: -0.147 ms
Remote clock offset: -0.094 ms


# Below is generated by plot.py at 2018-12-01 04:08:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 47.545 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 47.545 ms
Loss rate: 0.38%
```

Run 3: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.88 Mbit/s) ----   Flow 1 egress (mean 1.88 Mbit/s) ——
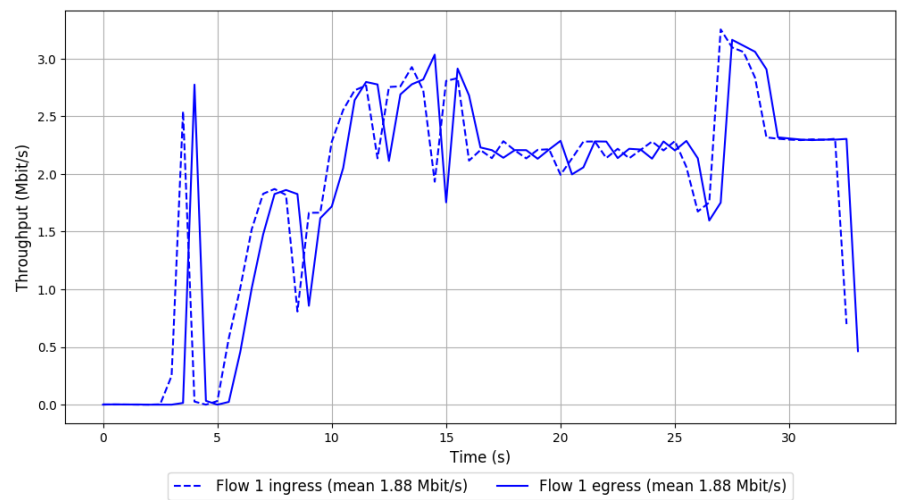
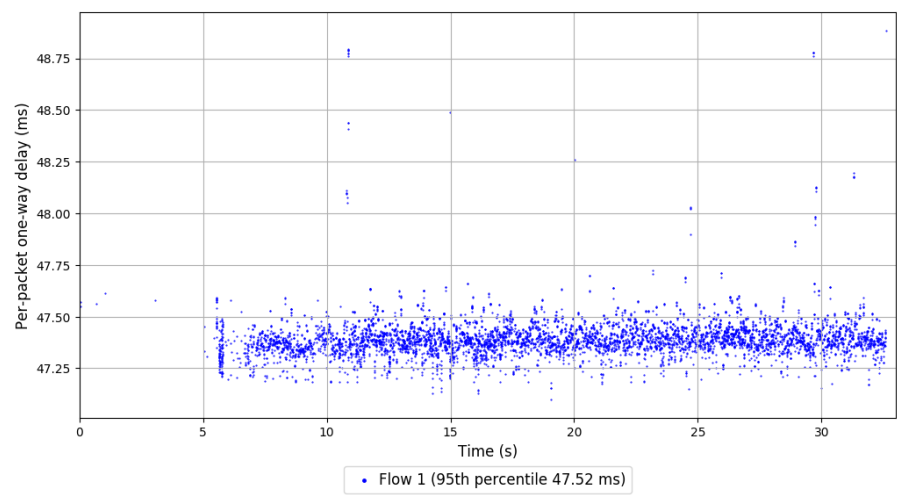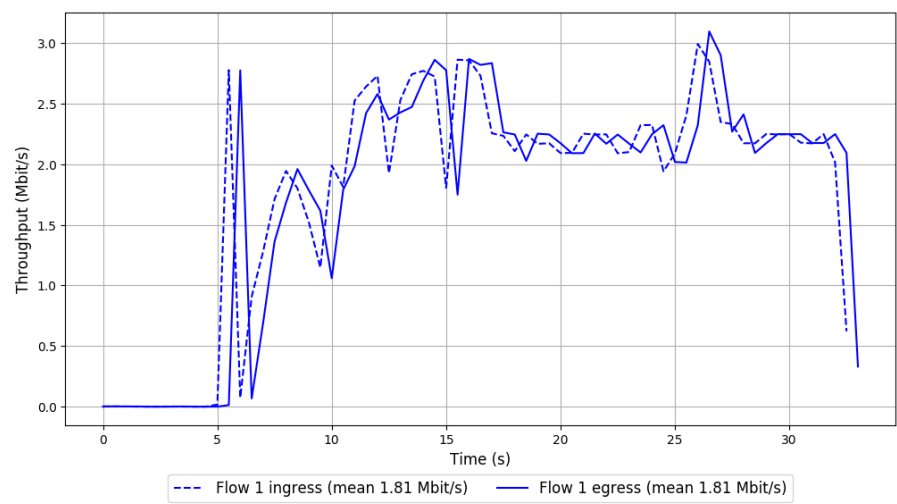

• Flow 1 (95th percentile 47.55 ms)

```
Run 4: Statistics of WebRTC media

Start at: 2018-12-01 01:41:41
End at: 2018-12-01 01:42:11
Local clock offset: -0.11 ms
Remote clock offset: -0.066 ms


# Below is generated by plot.py at 2018-12-01 04:08:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.81 Mbit/s
95th percentile per-packet one-way delay: 47.516 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 1.81 Mbit/s
95th percentile per-packet one-way delay: 47.516 ms
Loss rate: 0.38%
```

Run 4: Report of WebRTC media — Data Link

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

Flow 1 (95th percentile 47.52 ms)

```
Run 5: Statistics of WebRTC media

Start at: 2018-12-01 02:09:54
End at: 2018-12-01 02:10:24
Local clock offset: -0.055 ms
Remote clock offset: -0.061 ms


# Below is generated by plot.py at 2018-12-01 04:08:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 47.485 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 47.485 ms
Loss rate: 0.37%
```

Run 5: Report of WebRTC media — Data Link

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

Flow 1 (95th percentile 47.48 ms)