Pantheon Report

Generated at 2018-12-11 10:50:13 (UTC).

Data path: AWS India 1 on `ens5` (*local*) →India on `em1` (*remote*).

Repeated the test of 19 congestion control schemes 5 times.

Each test lasted for 30 seconds running 1 flow.

NTP offsets were measured against `nets.org.sg` and have been applied to correct the timestamps in logs.
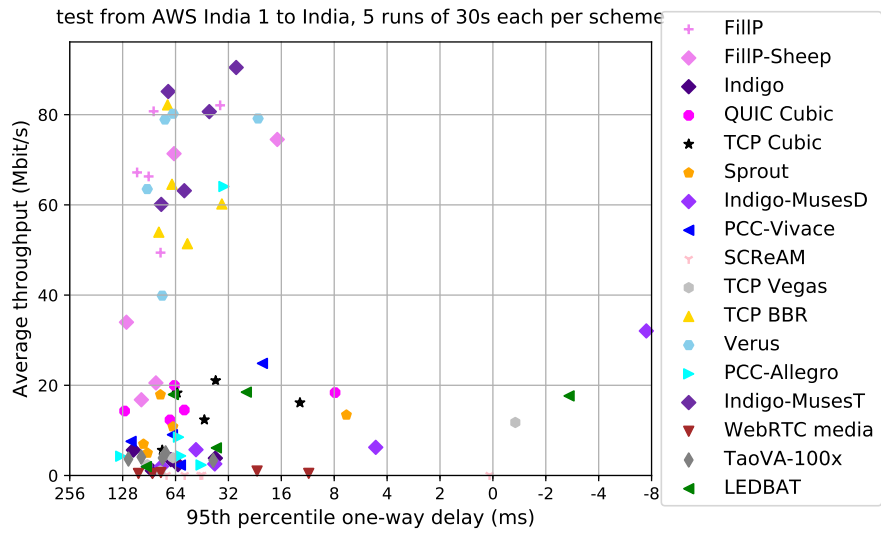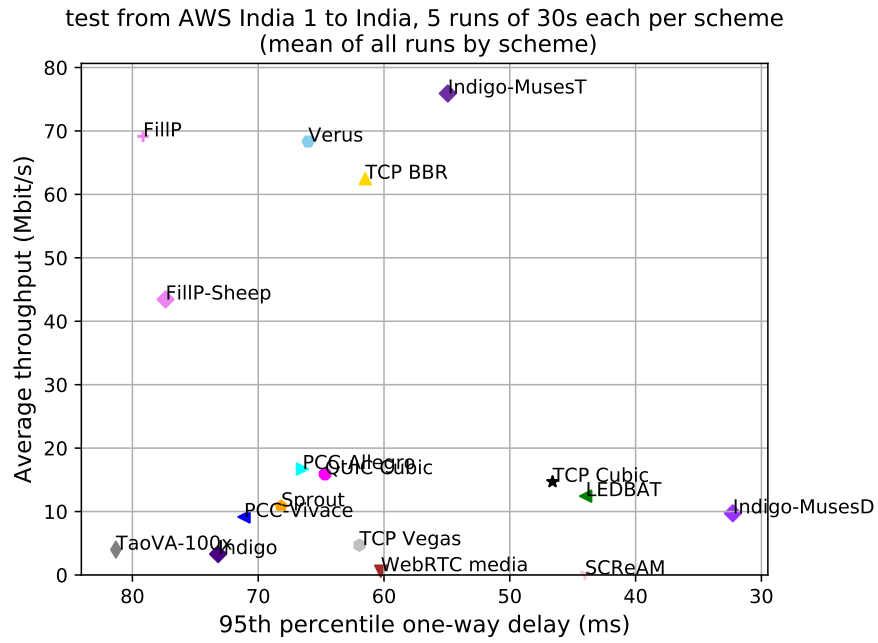
```
System info:
Linux 4.15.0-1029-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

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

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

test from AWS India 1 to India, 5 runs of 30s each per scheme
(mean of all runs by scheme)

test from AWS India 1 to India, 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	62.46	61.49	3.11
Copa	0	N/A	N/A	N/A
TCP Cubic	5	14.69	46.60	0.22
FillP	5	69.15	79.15	3.91
FillP-Sheep	5	43.43	77.36	1.68
Indigo	5	3.30	73.19	1.48
Indigo-MusesD	5	9.72	32.27	0.25
Indigo-MusesT	5	75.91	54.93	15.57
LEDBAT	5	12.43	43.97	0.41
PCC-Allegro	5	16.70	66.48	0.55
PCC-Expr	0	N/A	N/A	N/A
QUIC Cubic	5	15.90	64.69	0.54
SCReAM	5	0.11	44.03	0.31
Sprout	5	10.82	68.18	0.79
TaoVA-100x	5	3.99	81.31	7.99
TCP Vegas	5	4.70	61.95	0.19
Verus	5	68.33	66.03	8.04
PCC-Vivace	5	9.15	71.13	1.47
WebRTC media	5	0.60	60.26	0.31

```
Run 1: Statistics of TCP BBR

Start at: 2018-12-11 08:59:07
End at: 2018-12-11 08:59:37
Local clock offset: 4.546 ms
Remote clock offset: -4.446 ms

# Below is generated by plot.py at 2018-12-11 10:47:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 82.17 Mbit/s
95th percentile per-packet one-way delay: 71.046 ms
Loss rate: 4.44%
-- Flow 1:
Average throughput: 82.17 Mbit/s
95th percentile per-packet one-way delay: 71.046 ms
Loss rate: 4.44%
```
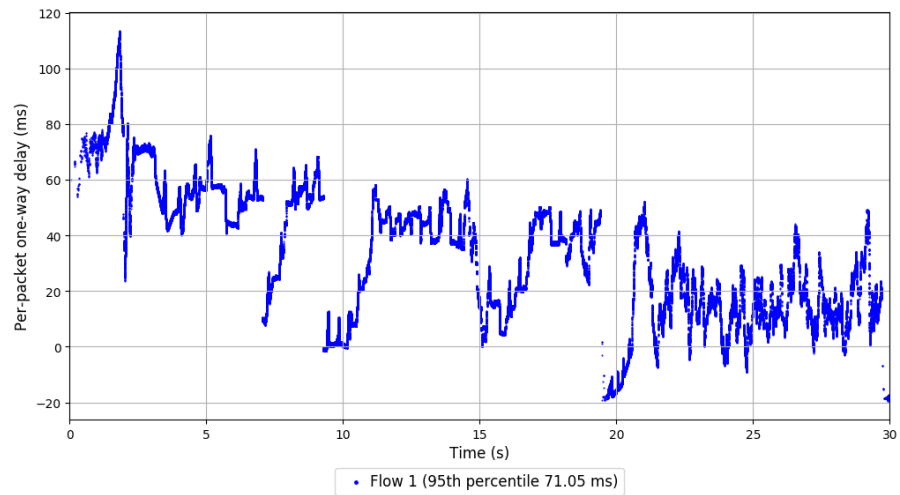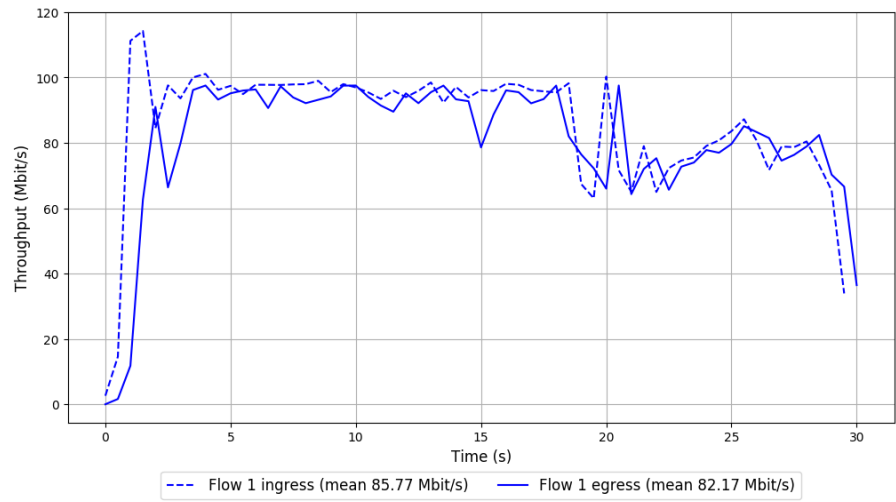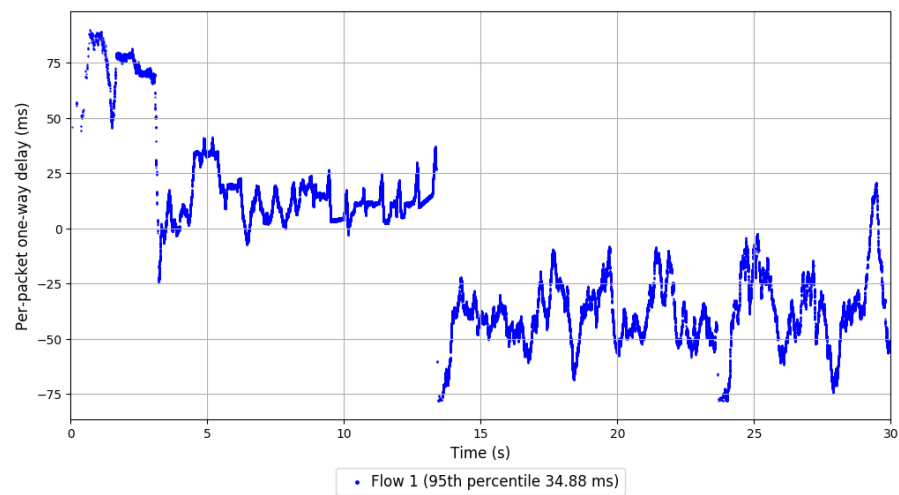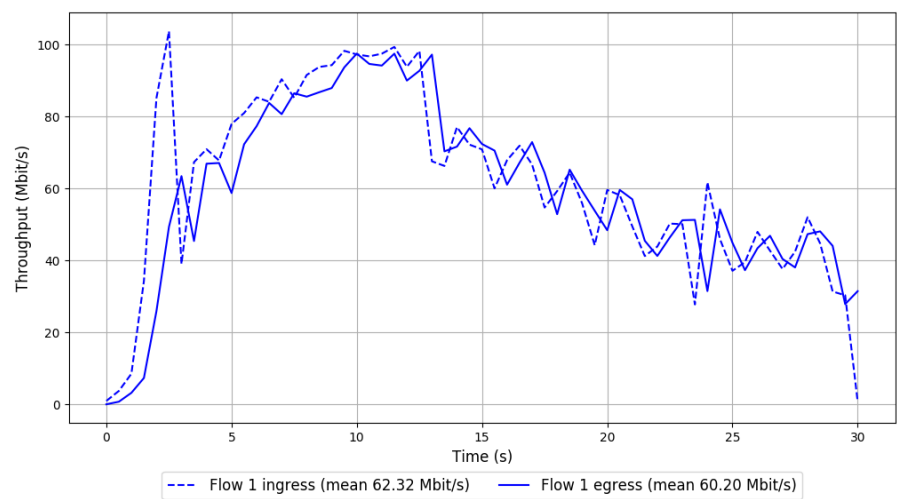
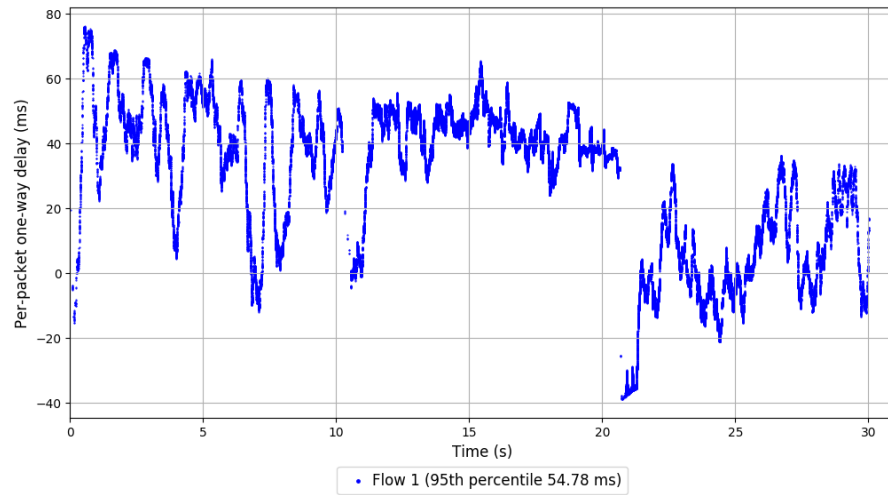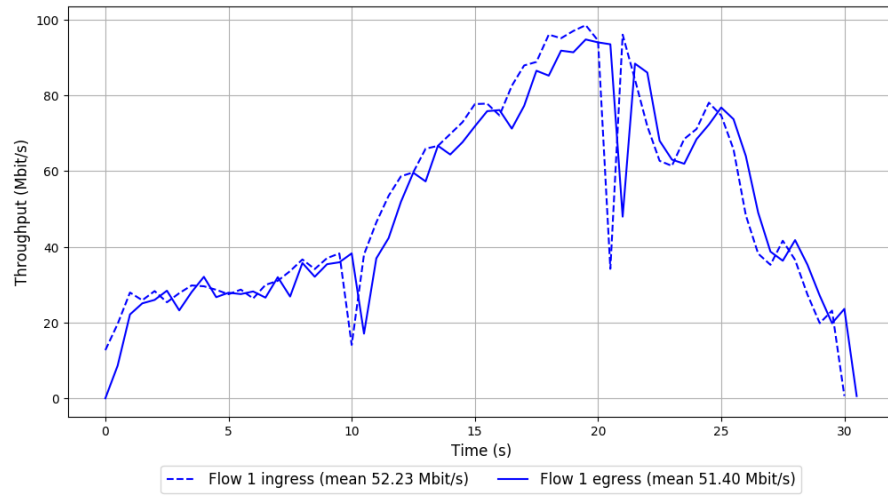Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-12-11 09:20:38
End at: 2018-12-11 09:21:08
Local clock offset: 4.97 ms
Remote clock offset: -56.808 ms


# Below is generated by plot.py at 2018-12-11 10:47:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 60.20 Mbit/s
95th percentile per-packet one-way delay: 34.876 ms
Loss rate: 3.72%
-- Flow 1:
Average throughput: 60.20 Mbit/s
95th percentile per-packet one-way delay: 34.876 ms
Loss rate: 3.72%
```
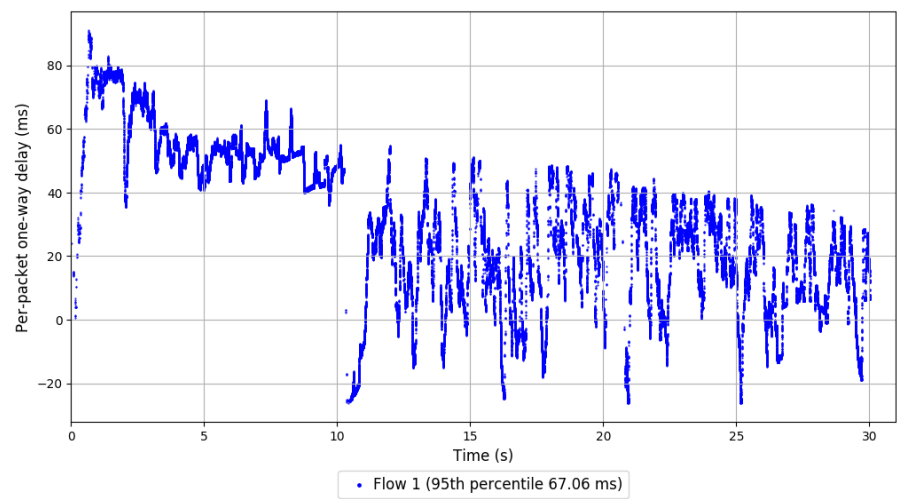
Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2018-12-11 09:42:02
End at: 2018-12-11 09:42:32
Local clock offset: 3.349 ms
Remote clock offset: -12.604 ms


# Below is generated by plot.py at 2018-12-11 10:47:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 51.40 Mbit/s
95th percentile per-packet one-way delay: 54.778 ms
Loss rate: 1.65%
-- Flow 1:
Average throughput: 51.40 Mbit/s
95th percentile per-packet one-way delay: 54.778 ms
Loss rate: 1.65%
```

Run 3: Report of TCP BBR — Data Link

```
Run 4: Statistics of TCP BBR

Start at: 2018-12-11 10:03:30
End at: 2018-12-11 10:04:00
Local clock offset: 0.961 ms
Remote clock offset: 5.656 ms


# Below is generated by plot.py at 2018-12-11 10:47:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 64.58 Mbit/s
95th percentile per-packet one-way delay: 67.061 ms
Loss rate: 2.02%
-- Flow 1:
Average throughput: 64.58 Mbit/s
95th percentile per-packet one-way delay: 67.061 ms
Loss rate: 2.02%
```
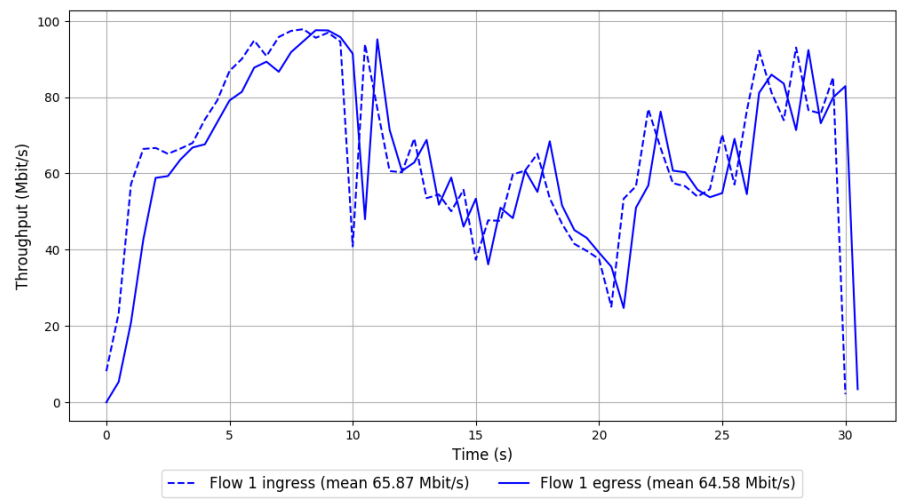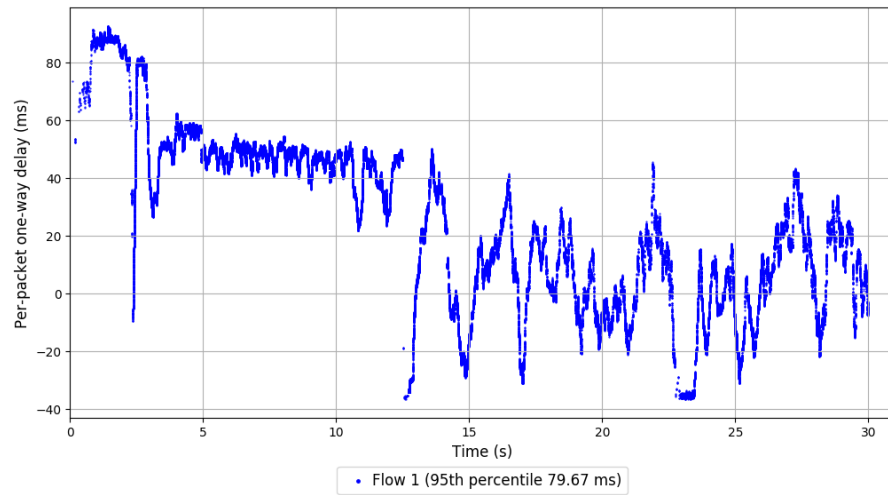
Run 4: Report of TCP BBR — Data Link

```
Run 5: Statistics of TCP BBR

Start at: 2018-12-11 10:25:02
End at: 2018-12-11 10:25:32
Local clock offset: 0.368 ms
Remote clock offset: -3.043 ms


# Below is generated by plot.py at 2018-12-11 10:47:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 53.95 Mbit/s
95th percentile per-packet one-way delay: 79.669 ms
Loss rate: 3.71%
-- Flow 1:
Average throughput: 53.95 Mbit/s
95th percentile per-packet one-way delay: 79.669 ms
Loss rate: 3.71%
```
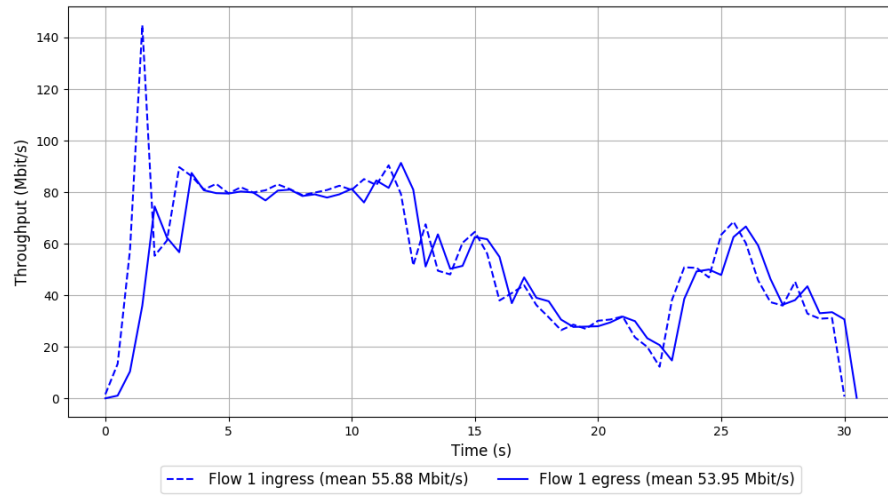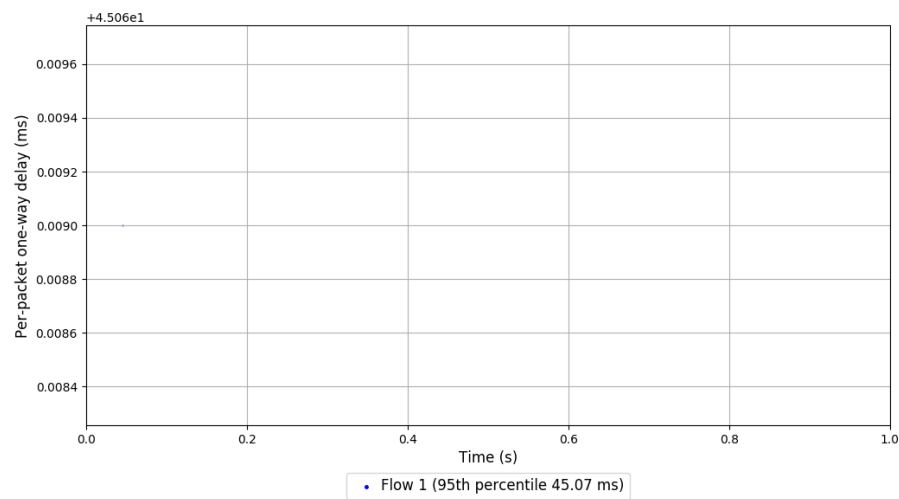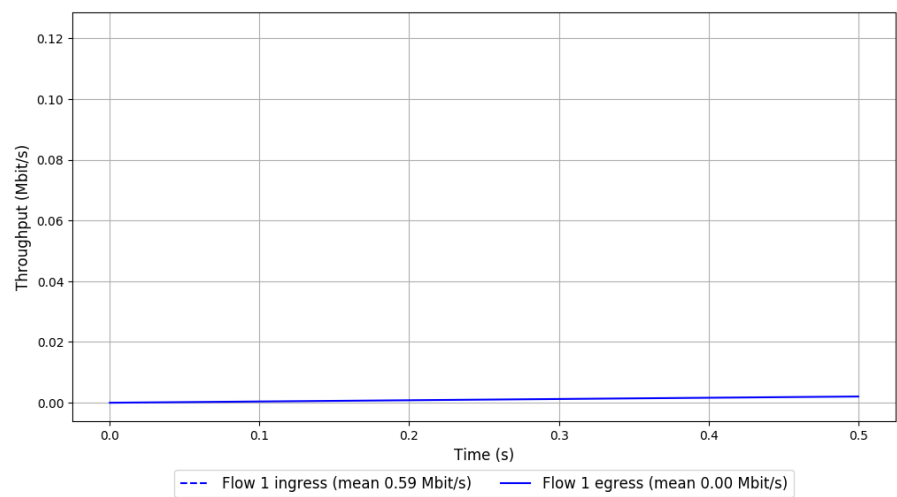
Run 5: Report of TCP BBR — Data Link

```
Run 1: Statistics of Copa

Start at: 2018-12-11 09:17:16
End at: 2018-12-11 09:17:46
Local clock offset: 3.39 ms
Remote clock offset: -3.009 ms
```

Run 1: Report of Copa — Data Link

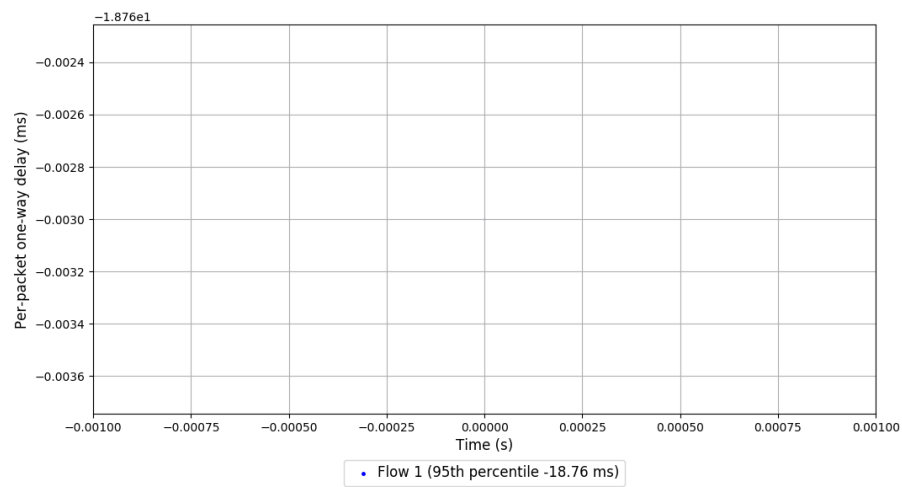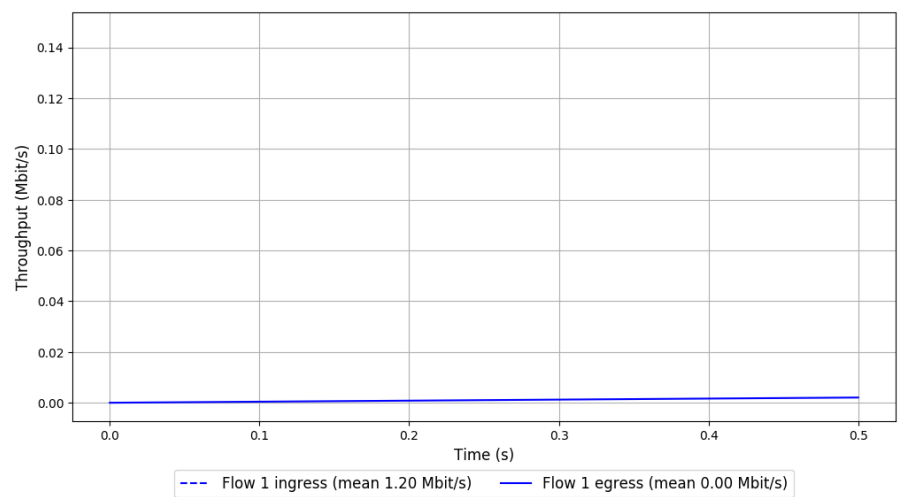Flow 1 ingress (mean 0.59 Mbit/s)   Flow 1 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile 45.07 ms)

```
Run 2: Statistics of Copa

Start at: 2018-12-11 09:38:42
End at: 2018-12-11 09:39:12
Local clock offset: 4.492 ms
Remote clock offset: -24.113 ms
```
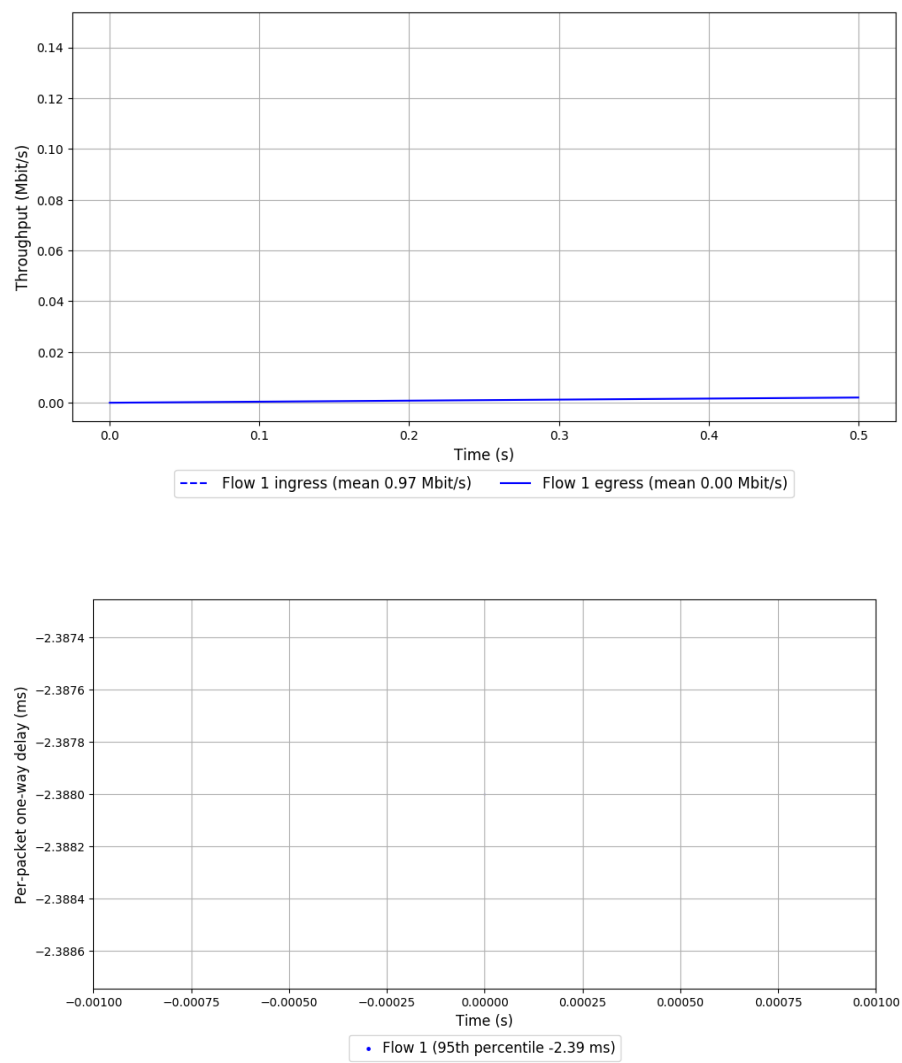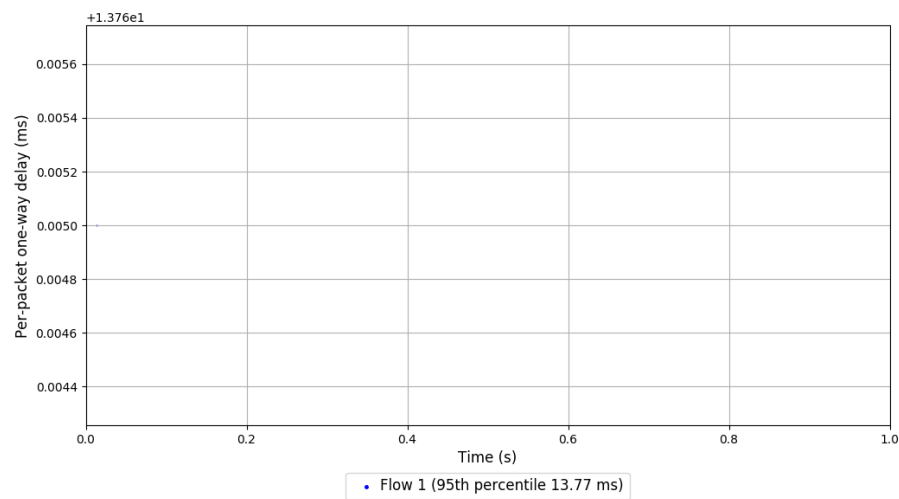
Run 2: Report of Copa — Data Link

Flow 1 ingress (mean 1.20 Mbit/s)   Flow 1 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile -18.76 ms)

```
Run 3: Statistics of Copa

Start at: 2018-12-11 10:00:09
End at: 2018-12-11 10:00:39
Local clock offset: -1.255 ms
Remote clock offset: -11.904 ms
```
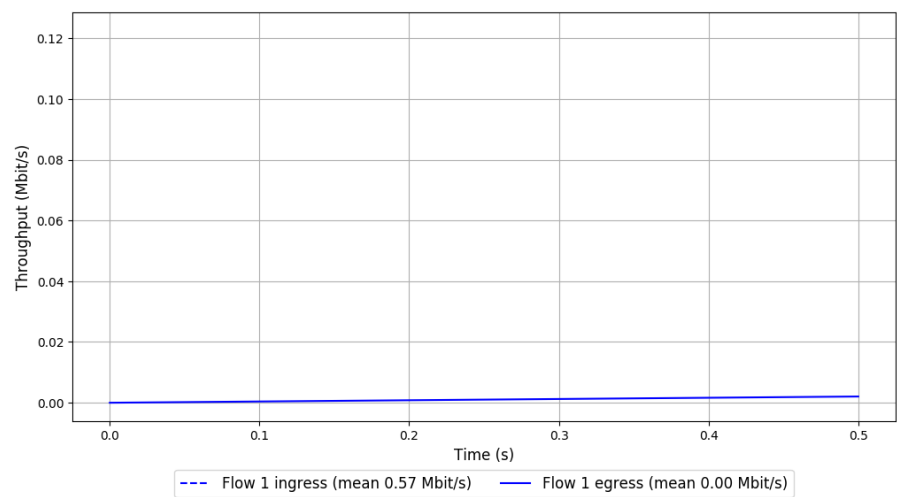
Run 3: Report of Copa — Data Link

Flow 1 ingress (mean 0.97 Mbit/s)   Flow 1 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile -2.39 ms)

```
Run 4: Statistics of Copa

Start at: 2018-12-11 10:21:40
End at: 2018-12-11 10:22:10
Local clock offset: 1.885 ms
Remote clock offset: -23.451 ms
```

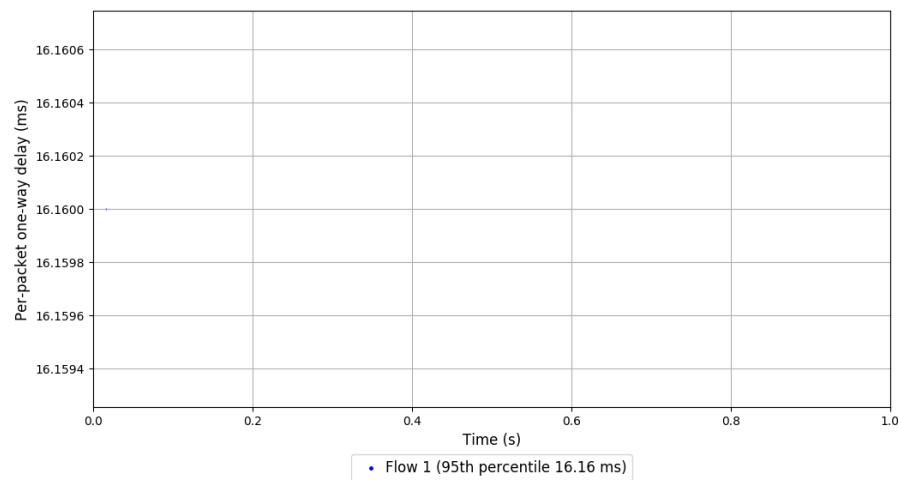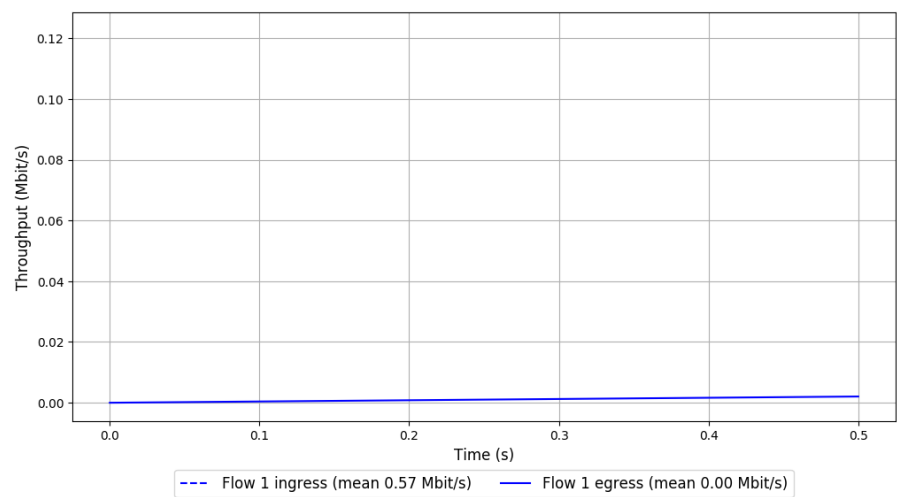Run 4: Report of Copa — Data Link

```
Run 5: Statistics of Copa

Start at: 2018-12-11 10:43:03
End at: 2018-12-11 10:43:33
Local clock offset: 4.203 ms
Remote clock offset: -18.824 ms
```

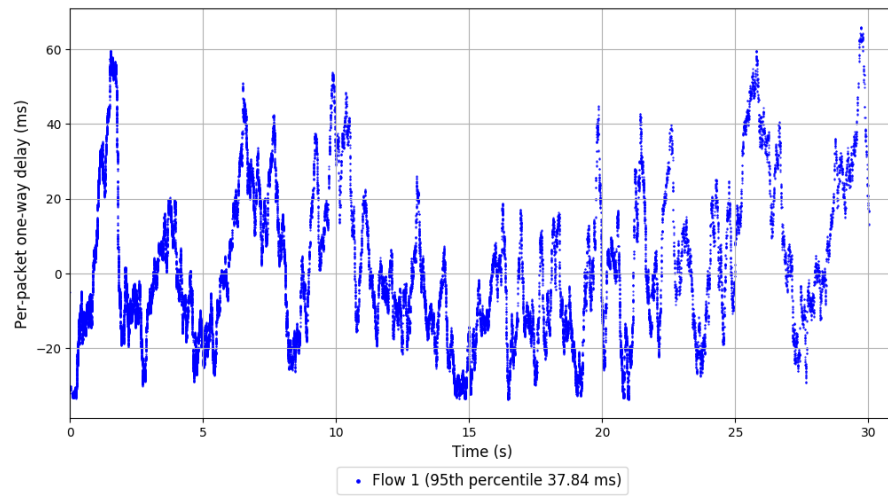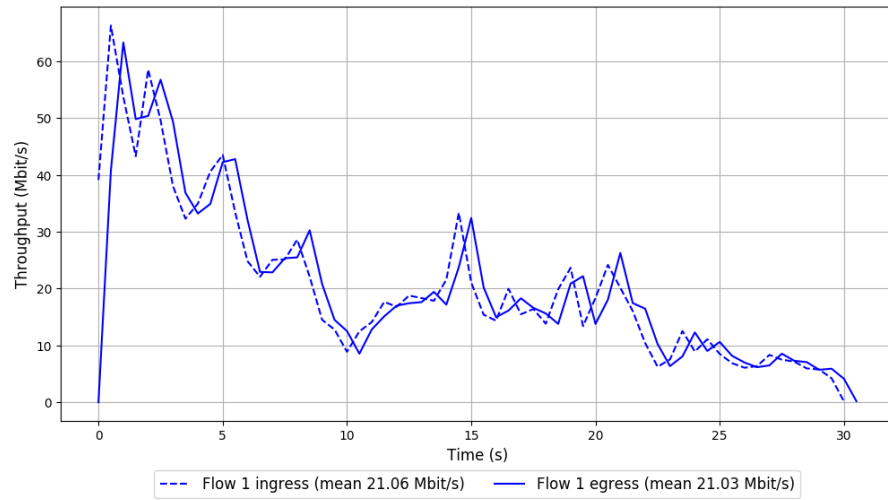Run 5: Report of Copa — Data Link

```
Run 1: Statistics of TCP Cubic

Start at: 2018-12-11 09:10:31
End at: 2018-12-11 09:11:01
Local clock offset: 3.096 ms
Remote clock offset: -15.591 ms

# Below is generated by plot.py at 2018-12-11 10:47:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 21.03 Mbit/s
95th percentile per-packet one-way delay: 37.842 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 21.03 Mbit/s
95th percentile per-packet one-way delay: 37.842 ms
Loss rate: 0.13%
```

Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 21.06 Mbit/s)   —— Flow 1 egress (mean 21.03 Mbit/s)

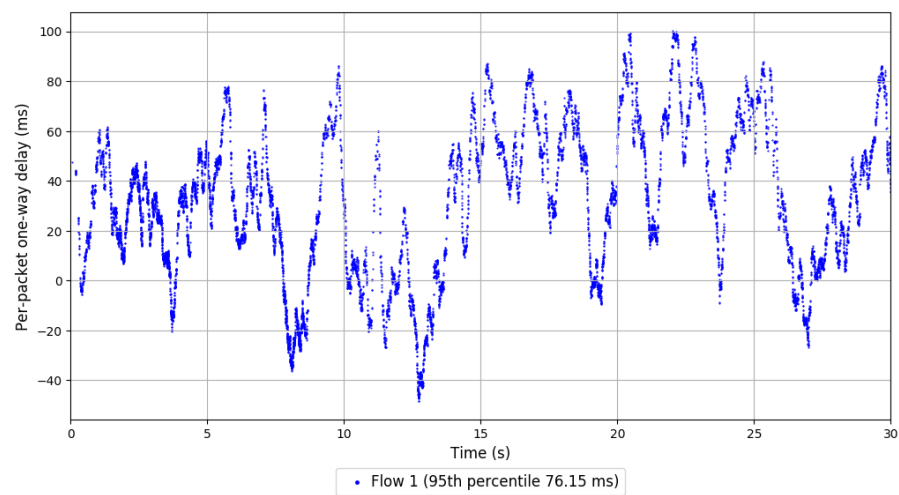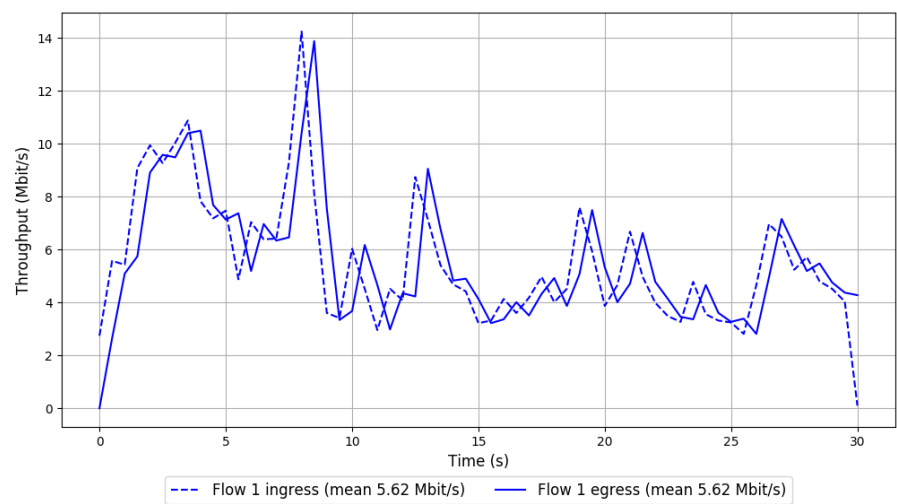

Flow 1 (95th percentile 37.84 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2018-12-11 09:32:00
End at: 2018-12-11 09:32:31
Local clock offset: 6.448 ms
Remote clock offset: -25.107 ms

# Below is generated by plot.py at 2018-12-11 10:47:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.62 Mbit/s
95th percentile per-packet one-way delay: 76.152 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 5.62 Mbit/s
95th percentile per-packet one-way delay: 76.152 ms
Loss rate: 0.37%
```

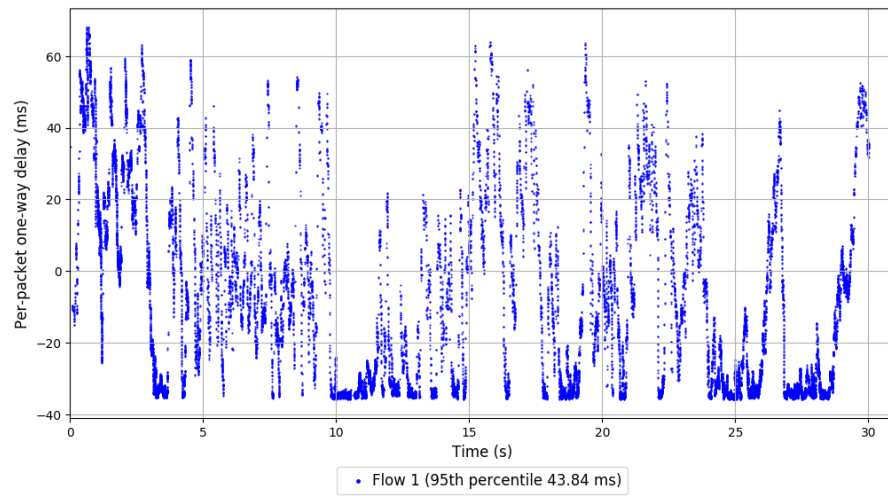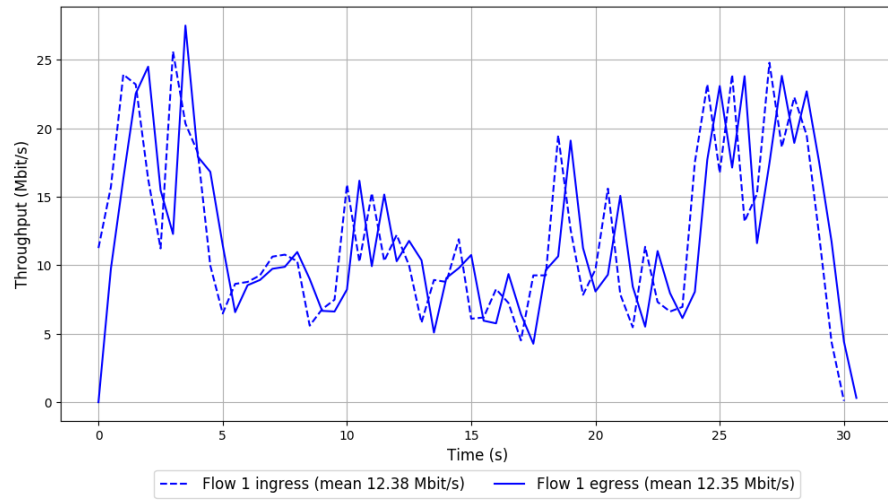Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2018-12-11 09:53:22
End at: 2018-12-11 09:53:52
Local clock offset: 1.693 ms
Remote clock offset: -5.902 ms


# Below is generated by plot.py at 2018-12-11 10:47:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.35 Mbit/s
95th percentile per-packet one-way delay: 43.841 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 12.35 Mbit/s
95th percentile per-packet one-way delay: 43.841 ms
Loss rate: 0.36%
```

Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 12.38 Mbit/s) --- Flow 1 egress (mean 12.35 Mbit/s)

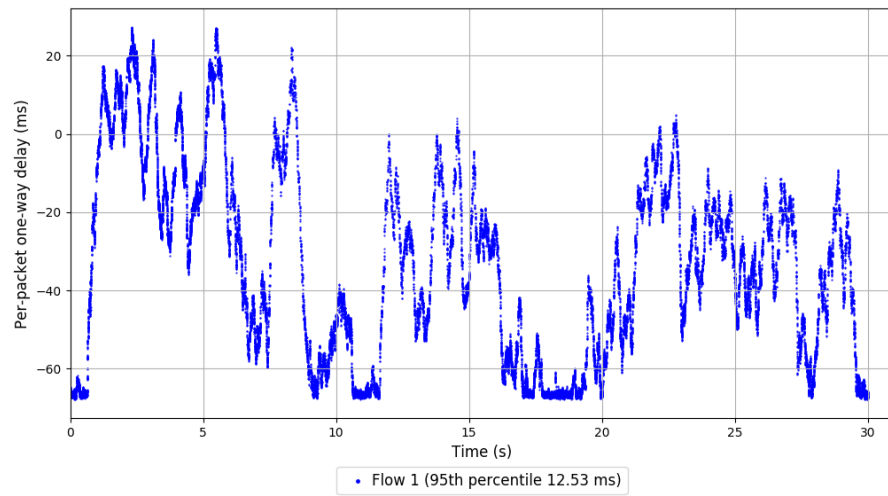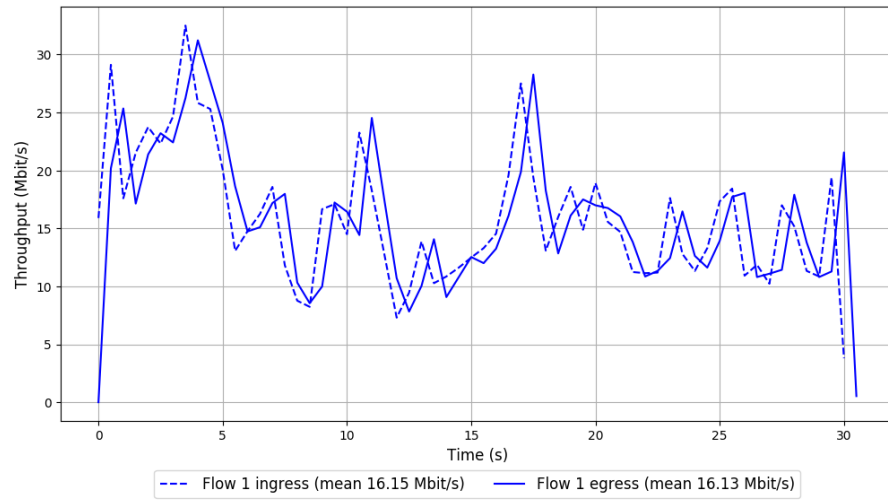Flow 1 (95th percentile 43.84 ms)

```
Run 4: Statistics of TCP Cubic

Start at: 2018-12-11 10:14:59
End at: 2018-12-11 10:15:29
Local clock offset: -0.186 ms
Remote clock offset: -36.136 ms


# Below is generated by plot.py at 2018-12-11 10:47:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 16.13 Mbit/s
95th percentile per-packet one-way delay: 12.534 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 16.13 Mbit/s
95th percentile per-packet one-way delay: 12.534 ms
Loss rate: 0.08%
```

Run 4: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 16.15 Mbit/s) --- Flow 1 egress (mean 16.13 Mbit/s)

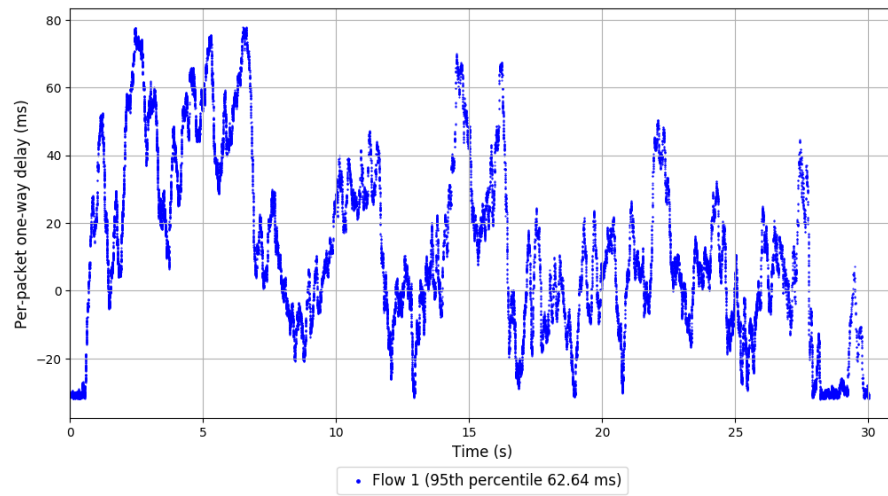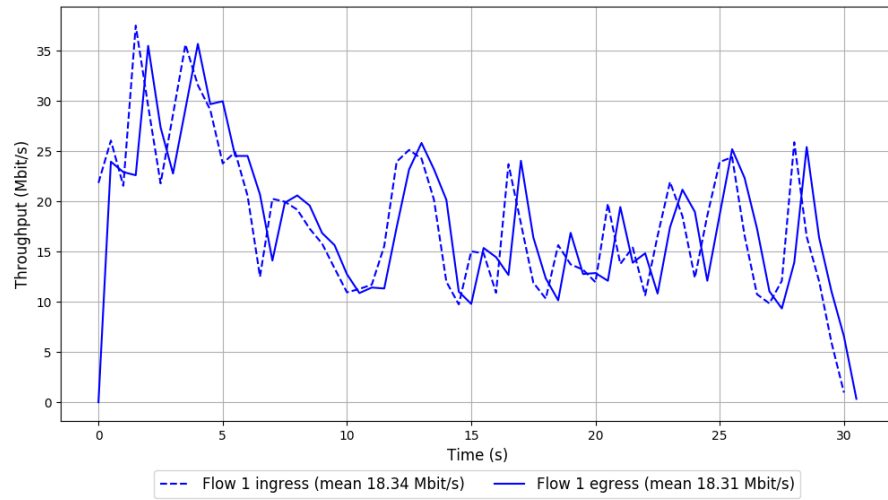

Flow 1 (95th percentile 12.53 ms)

```
Run 5: Statistics of TCP Cubic

Start at: 2018-12-11 10:36:20
End at: 2018-12-11 10:36:50
Local clock offset: -7.578 ms
Remote clock offset: -4.594 ms


# Below is generated by plot.py at 2018-12-11 10:47:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 18.31 Mbit/s
95th percentile per-packet one-way delay: 62.638 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 18.31 Mbit/s
95th percentile per-packet one-way delay: 62.638 ms
Loss rate: 0.17%
```
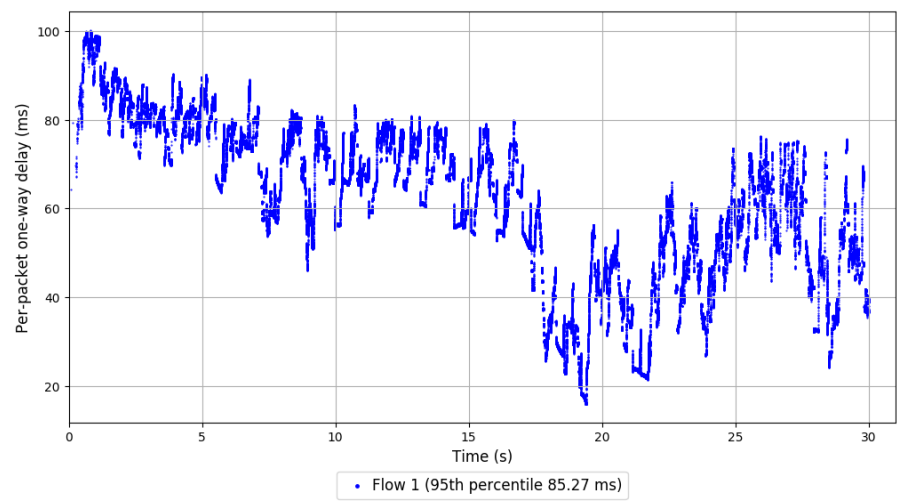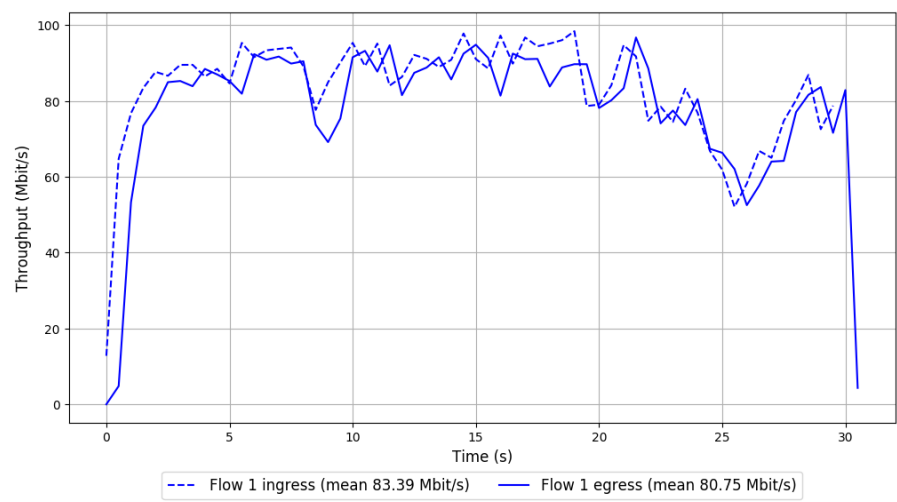
Run 5: Report of TCP Cubic — Data Link

```
Run 1: Statistics of FillP

Start at: 2018-12-11 09:03:46
End at: 2018-12-11 09:04:16
Local clock offset: 0.85 ms
Remote clock offset: 24.334 ms


# Below is generated by plot.py at 2018-12-11 10:47:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 80.75 Mbit/s
95th percentile per-packet one-way delay: 85.272 ms
Loss rate: 3.25%
-- Flow 1:
Average throughput: 80.75 Mbit/s
95th percentile per-packet one-way delay: 85.272 ms
Loss rate: 3.25%
```

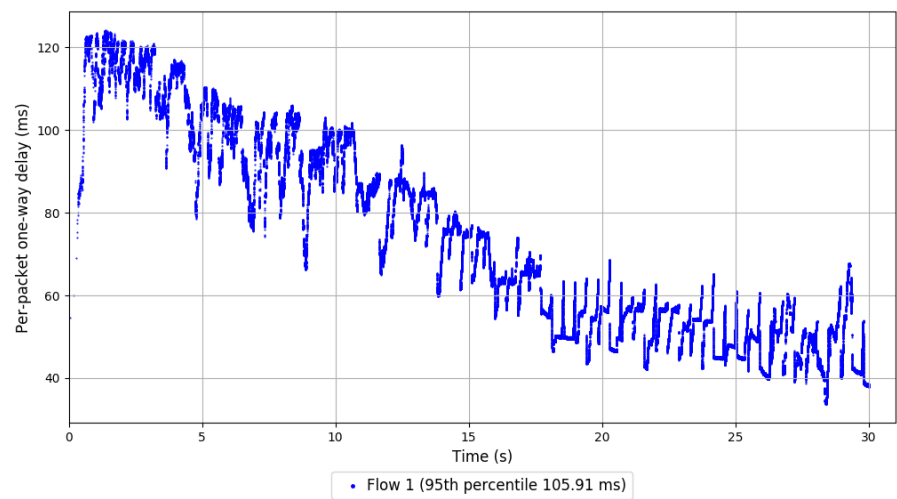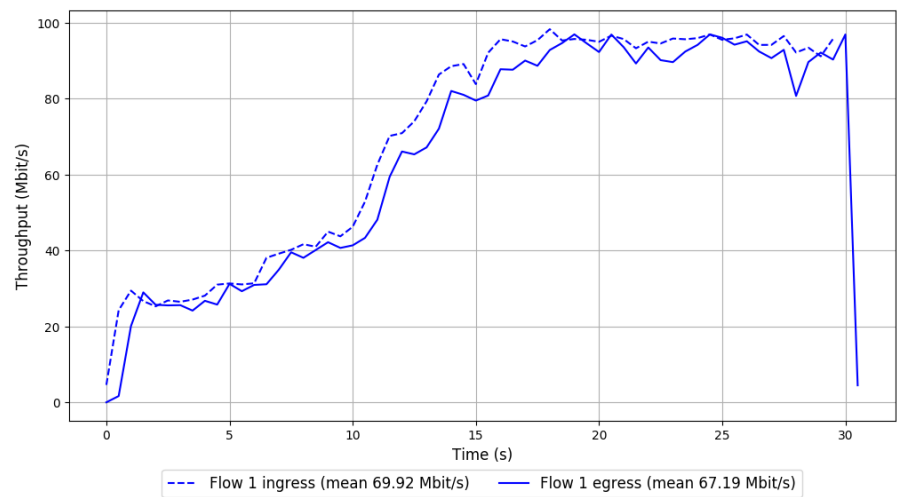# Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2018-12-11 09:25:13
End at: 2018-12-11 09:25:43
Local clock offset: 6.177 ms
Remote clock offset: -4.729 ms


# Below is generated by plot.py at 2018-12-11 10:47:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 67.19 Mbit/s
95th percentile per-packet one-way delay: 105.906 ms
Loss rate: 3.99%
-- Flow 1:
Average throughput: 67.19 Mbit/s
95th percentile per-packet one-way delay: 105.906 ms
Loss rate: 3.99%
```
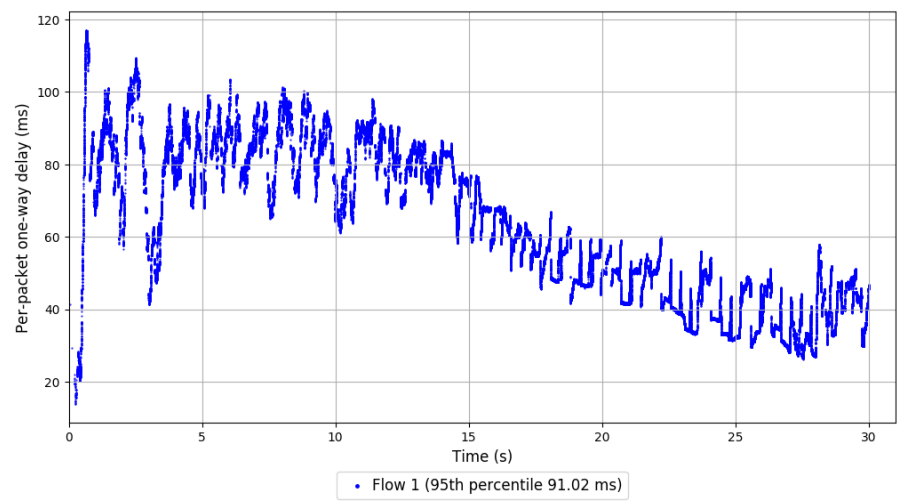
Run 2: Report of FillP — Data Link

Flow 1 ingress (mean 69.92 Mbit/s)   Flow 1 egress (mean 67.19 Mbit/s)

Flow 1 (95th percentile 105.91 ms)

```
Run 3: Statistics of FillP

Start at: 2018-12-11 09:46:34
End at: 2018-12-11 09:47:04
Local clock offset: 2.326 ms
Remote clock offset: -0.06 ms


# Below is generated by plot.py at 2018-12-11 10:47:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 66.31 Mbit/s
95th percentile per-packet one-way delay: 91.017 ms
Loss rate: 3.30%
-- Flow 1:
Average throughput: 66.31 Mbit/s
95th percentile per-packet one-way delay: 91.017 ms
Loss rate: 3.30%
```
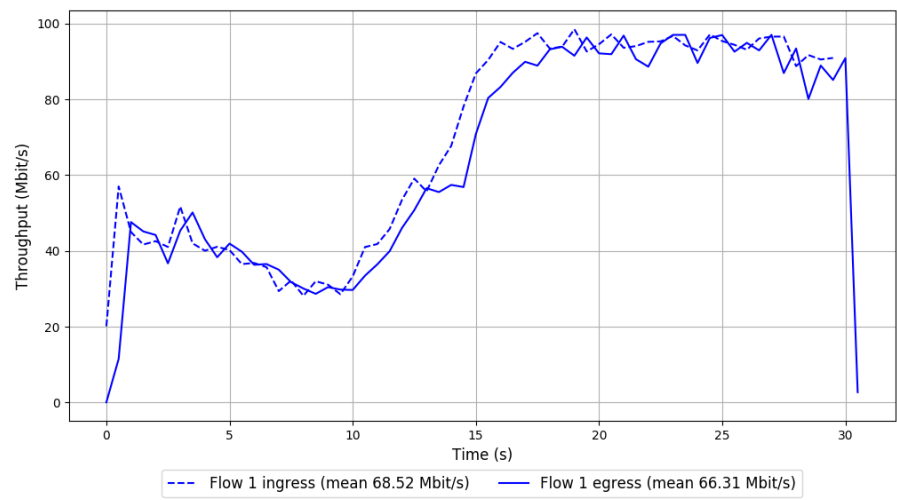
Run 3: Report of FillP — Data Link

Flow 1 ingress (mean 68.52 Mbit/s)   Flow 1 egress (mean 66.31 Mbit/s)

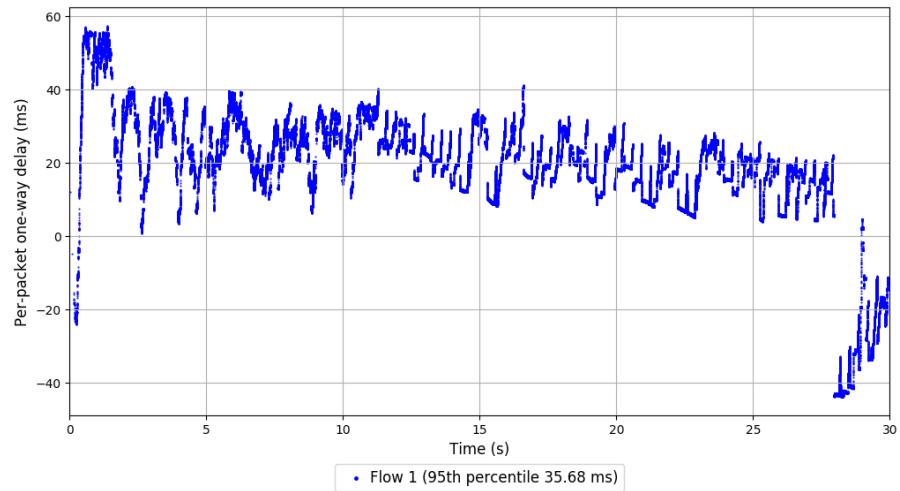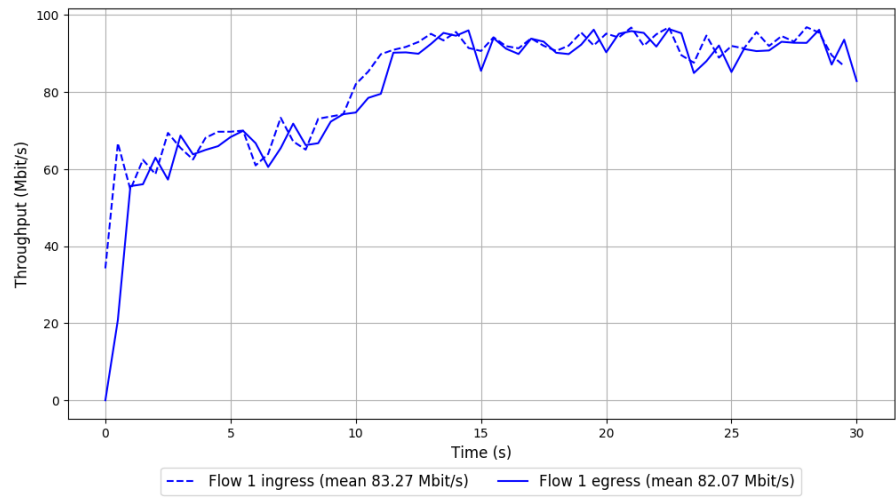Flow 1 (95th percentile 91.02 ms)

```
Run 4: Statistics of FillP

Start at: 2018-12-11 10:08:07
End at: 2018-12-11 10:08:37
Local clock offset: -1.755 ms
Remote clock offset: -14.442 ms


# Below is generated by plot.py at 2018-12-11 10:48:10
# Datalink statistics
-- Total of 1 flow:
Average throughput: 82.07 Mbit/s
95th percentile per-packet one-way delay: 35.676 ms
Loss rate: 1.52%
-- Flow 1:
Average throughput: 82.07 Mbit/s
95th percentile per-packet one-way delay: 35.676 ms
Loss rate: 1.52%
```

Run 4: Report of FillP — Data Link

Flow 1 ingress (mean 83.27 Mbit/s)　　Flow 1 egress (mean 82.07 Mbit/s)

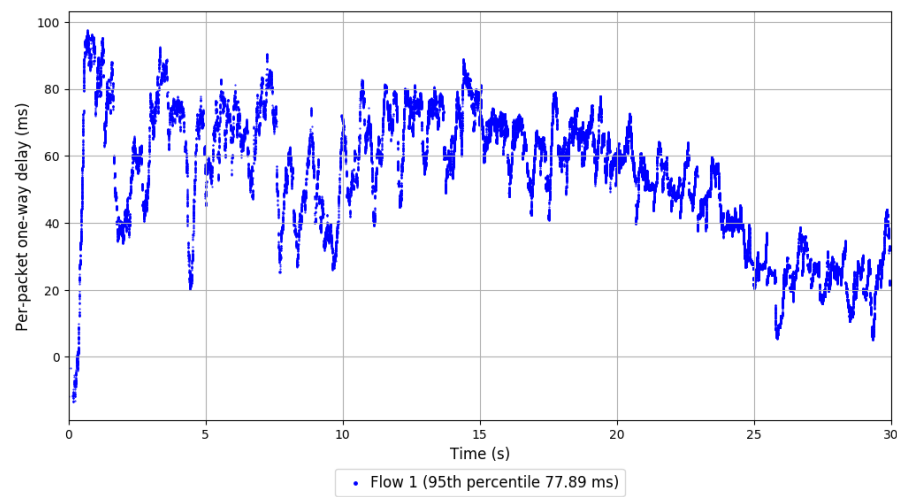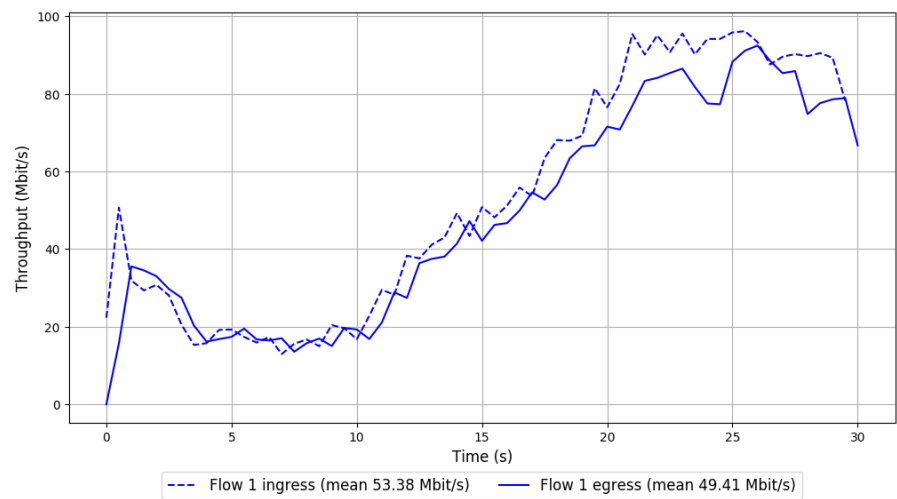Flow 1 (95th percentile 35.68 ms)

```
Run 5: Statistics of FillP

Start at: 2018-12-11 10:29:35
End at: 2018-12-11 10:30:05
Local clock offset: -8.26 ms
Remote clock offset: -26.749 ms


# Below is generated by plot.py at 2018-12-11 10:48:10
# Datalink statistics
-- Total of 1 flow:
Average throughput: 49.41 Mbit/s
95th percentile per-packet one-way delay: 77.890 ms
Loss rate: 7.47%
-- Flow 1:
Average throughput: 49.41 Mbit/s
95th percentile per-packet one-way delay: 77.890 ms
Loss rate: 7.47%
```

Run 5: Report of FillP — Data Link

```
Run 1: Statistics of FillP-Sheep

Start at: 2018-12-11 09:18:23
End at: 2018-12-11 09:18:53
Local clock offset: 4.373 ms
Remote clock offset: -10.524 ms


# Below is generated by plot.py at 2018-12-11 10:48:10
# Datalink statistics
-- Total of 1 flow:
Average throughput: 16.79 Mbit/s
95th percentile per-packet one-way delay: 100.149 ms
Loss rate: 1.22%
-- Flow 1:
Average throughput: 16.79 Mbit/s
95th percentile per-packet one-way delay: 100.149 ms
Loss rate: 1.22%
```
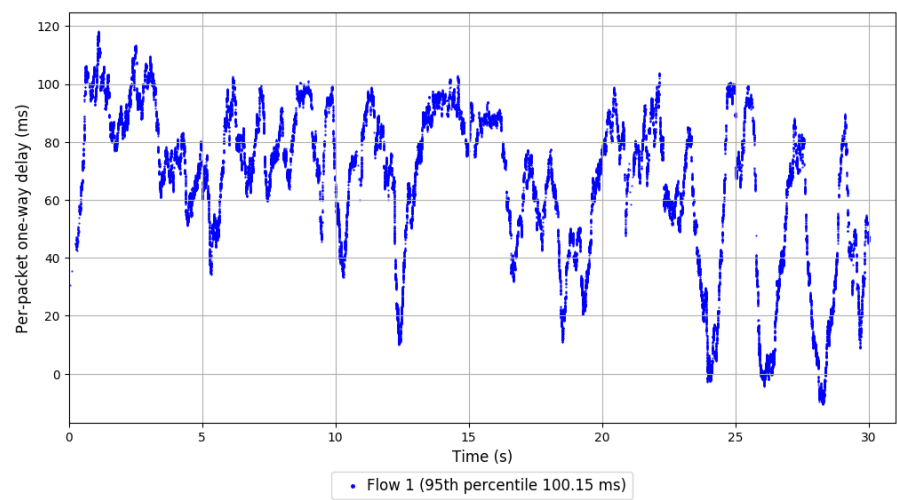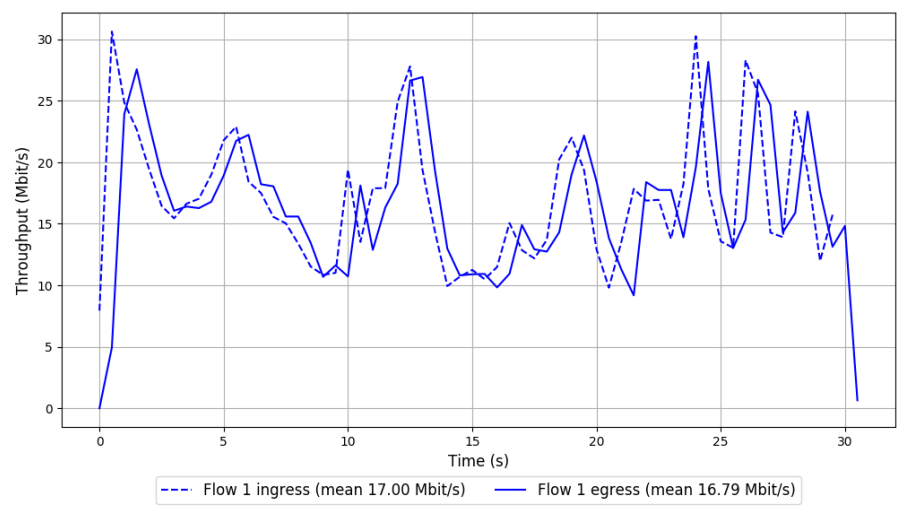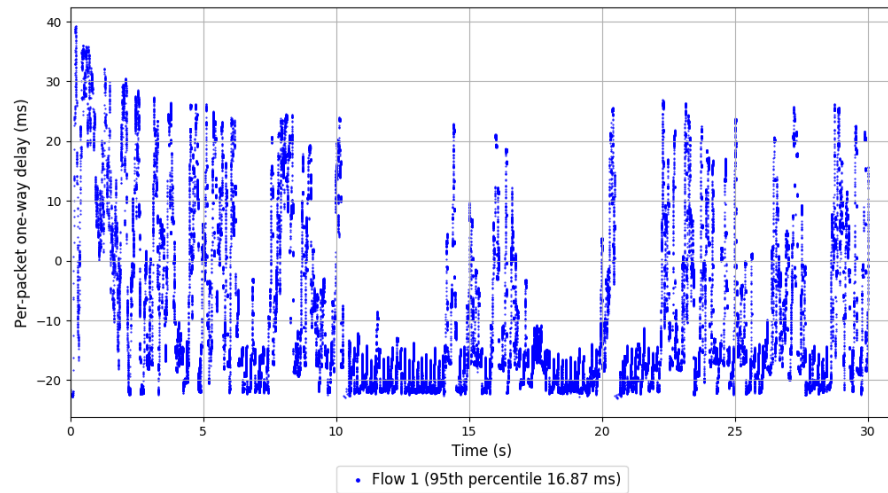
Run 1: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 17.00 Mbit/s)   Flow 1 egress (mean 16.79 Mbit/s)

Flow 1 (95th percentile 100.15 ms)

```
Run 2: Statistics of FillP-Sheep

Start at: 2018-12-11 09:39:48
End at: 2018-12-11 09:40:18
Local clock offset: 5.638 ms
Remote clock offset: 4.273 ms


# Below is generated by plot.py at 2018-12-11 10:48:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 74.51 Mbit/s
95th percentile per-packet one-way delay: 16.873 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 74.51 Mbit/s
95th percentile per-packet one-way delay: 16.873 ms
Loss rate: 0.69%
```
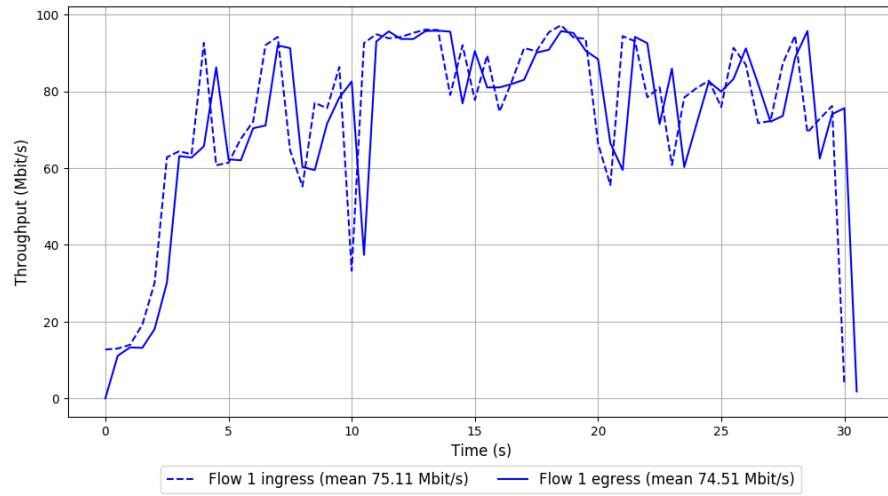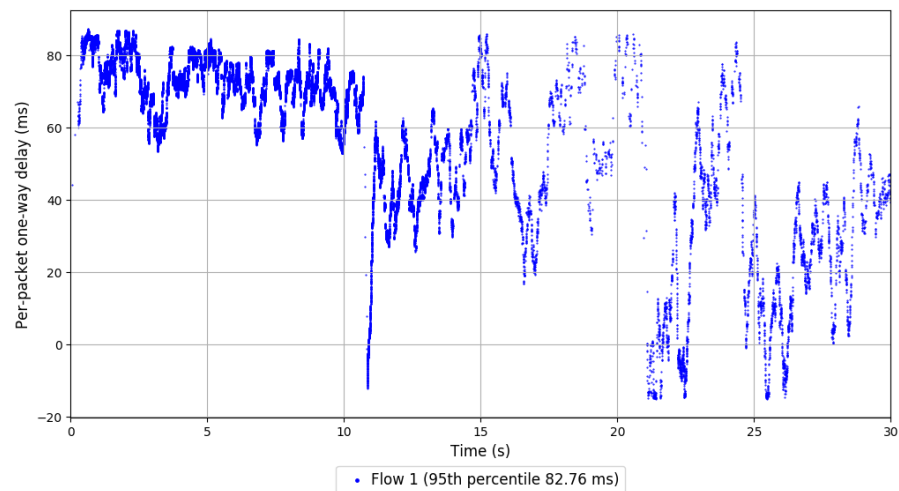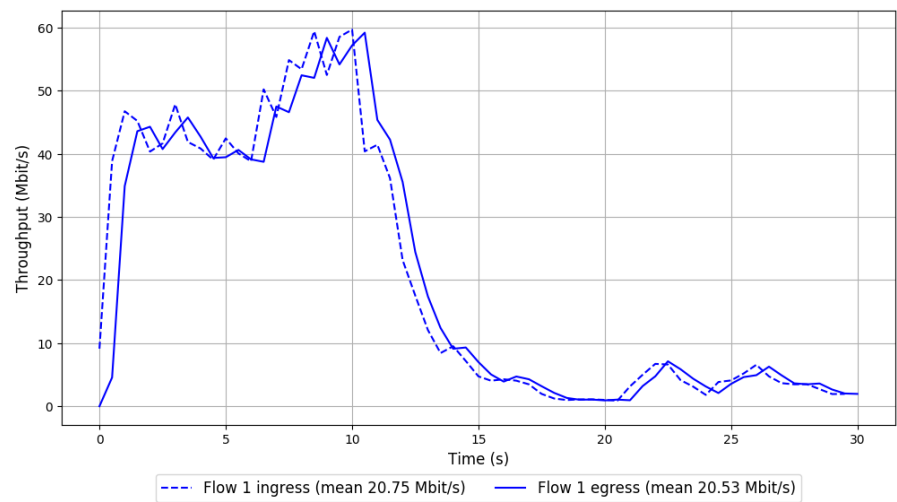
Run 2: Report of FillP-Sheep — Data Link

```
Run 3: Statistics of FillP-Sheep

Start at: 2018-12-11 10:01:16
End at: 2018-12-11 10:01:46
Local clock offset: 0.588 ms
Remote clock offset: 16.151 ms


# Below is generated by plot.py at 2018-12-11 10:48:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 20.53 Mbit/s
95th percentile per-packet one-way delay: 82.762 ms
Loss rate: 1.20%
-- Flow 1:
Average throughput: 20.53 Mbit/s
95th percentile per-packet one-way delay: 82.762 ms
Loss rate: 1.20%
```

Run 3: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 20.75 Mbit/s) ----- Flow 1 egress (mean 20.53 Mbit/s) ——
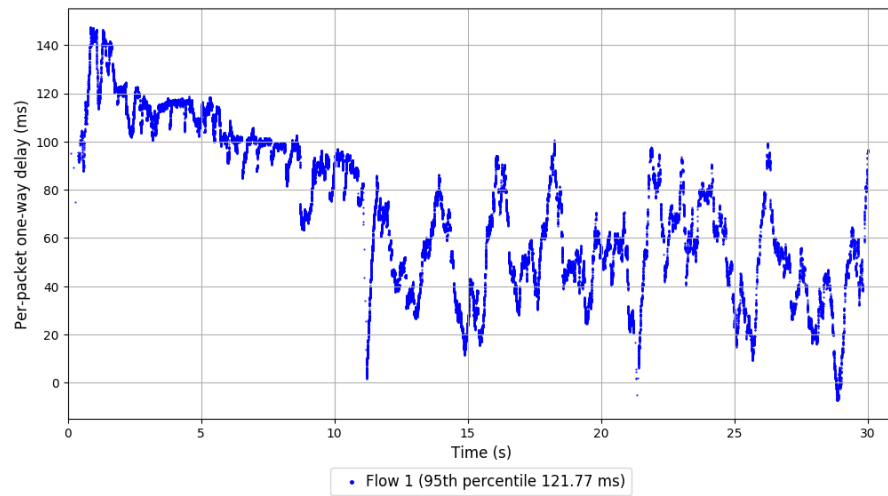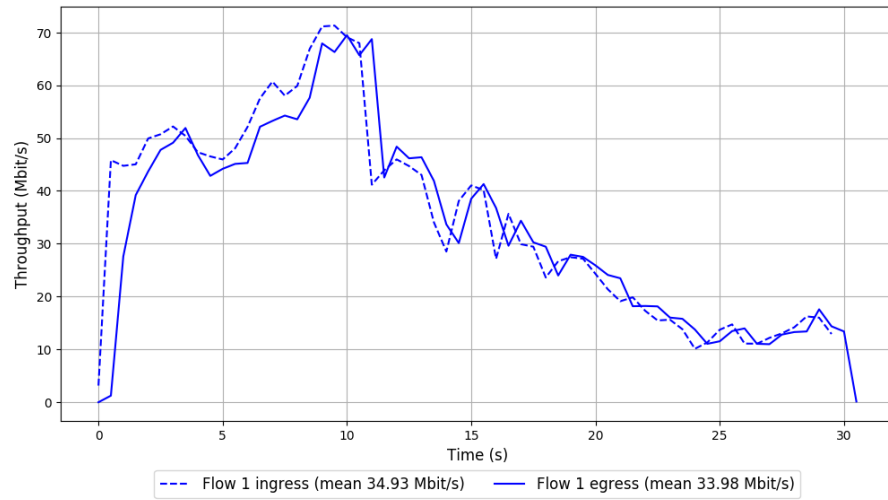

Flow 1 (95th percentile 82.76 ms)

```
Run 4: Statistics of FillP-Sheep

Start at: 2018-12-11 10:22:47
End at: 2018-12-11 10:23:17
Local clock offset: -7.124 ms
Remote clock offset: 10.279 ms


# Below is generated by plot.py at 2018-12-11 10:48:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 33.98 Mbit/s
95th percentile per-packet one-way delay: 121.774 ms
Loss rate: 2.98%
-- Flow 1:
Average throughput: 33.98 Mbit/s
95th percentile per-packet one-way delay: 121.774 ms
Loss rate: 2.98%
```

Run 4: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 34.93 Mbit/s)   Flow 1 egress (mean 33.98 Mbit/s)
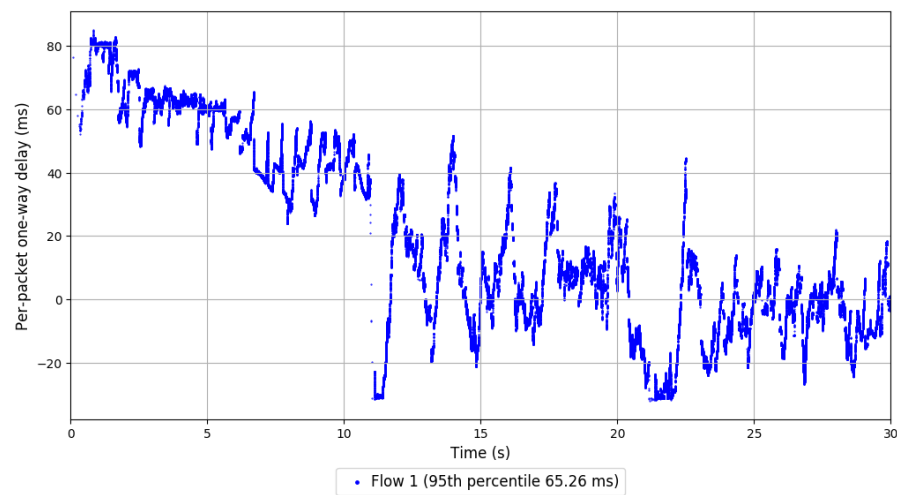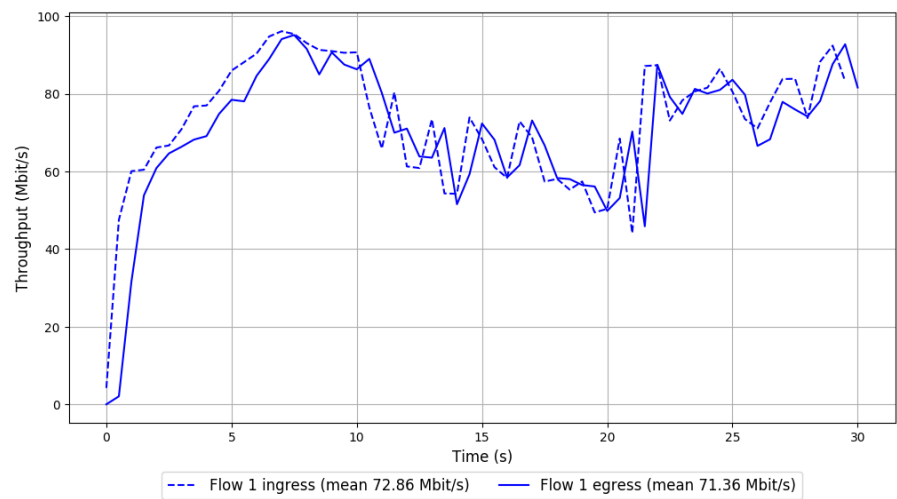

• Flow 1 (95th percentile 121.77 ms)

```
Run 5: Statistics of FillP-Sheep

Start at: 2018-12-11 10:44:10
End at: 2018-12-11 10:44:40
Local clock offset: -7.101 ms
Remote clock offset: -3.485 ms


# Below is generated by plot.py at 2018-12-11 10:48:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 71.36 Mbit/s
95th percentile per-packet one-way delay: 65.264 ms
Loss rate: 2.32%
-- Flow 1:
Average throughput: 71.36 Mbit/s
95th percentile per-packet one-way delay: 65.264 ms
Loss rate: 2.32%
```
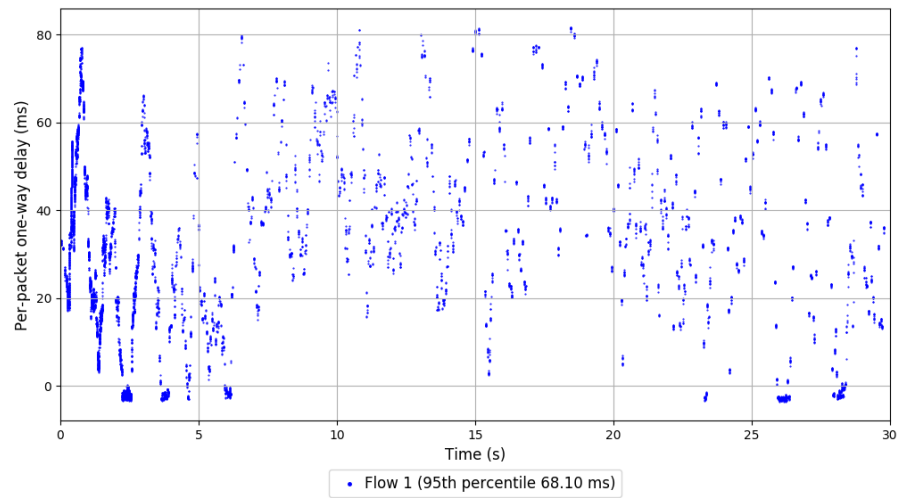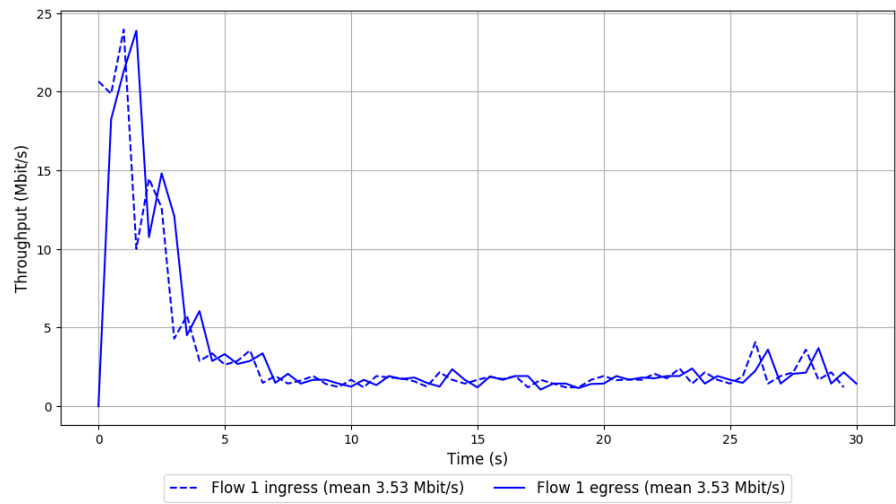
Run 5: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 72.86 Mbit/s) --- Flow 1 egress (mean 71.36 Mbit/s)
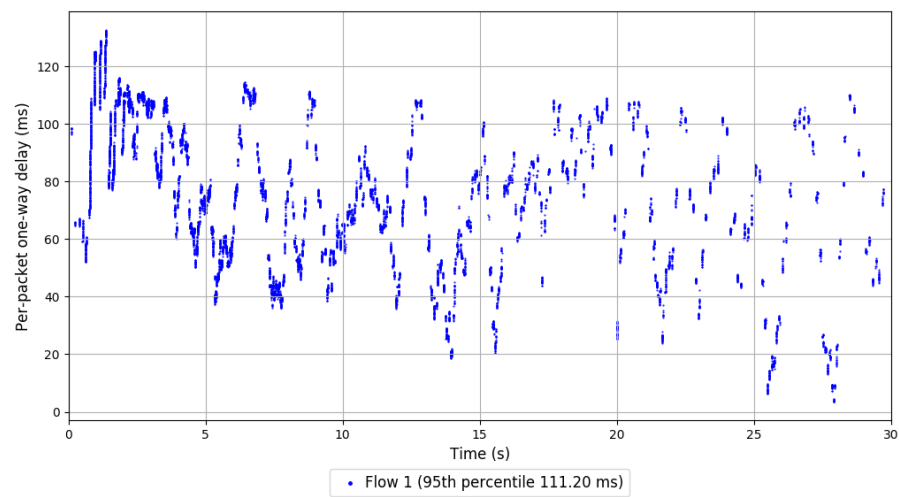

• Flow 1 (95th percentile 65.26 ms)

```
Run 1: Statistics of Indigo

Start at: 2018-12-11 09:00:17
End at: 2018-12-11 09:00:47
Local clock offset: 3.914 ms
Remote clock offset: 11.256 ms


# Below is generated by plot.py at 2018-12-11 10:48:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.53 Mbit/s
95th percentile per-packet one-way delay: 68.098 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 3.53 Mbit/s
95th percentile per-packet one-way delay: 68.098 ms
Loss rate: 0.16%
```

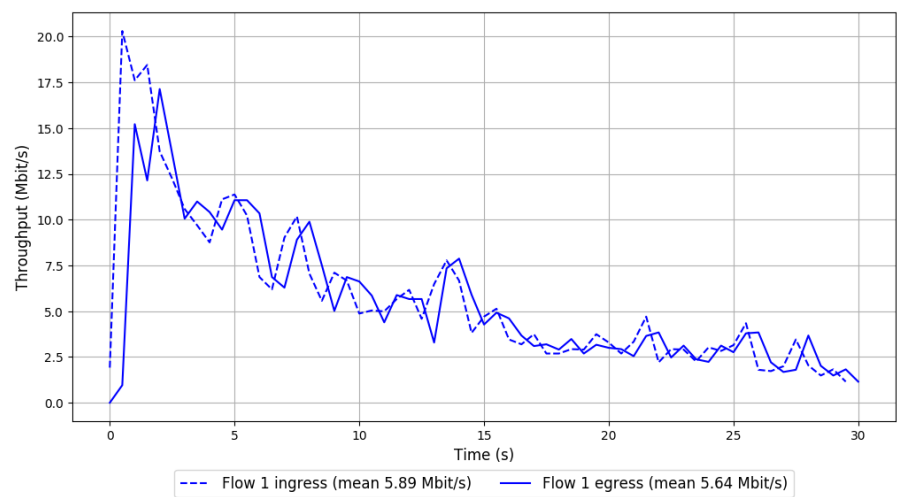Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-12-11 09:21:47
End at: 2018-12-11 09:22:17
Local clock offset: 3.187 ms
Remote clock offset: -21.168 ms


# Below is generated by plot.py at 2018-12-11 10:48:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.64 Mbit/s
95th percentile per-packet one-way delay: 111.199 ms
Loss rate: 4.37%
-- Flow 1:
Average throughput: 5.64 Mbit/s
95th percentile per-packet one-way delay: 111.199 ms
Loss rate: 4.37%
```

Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-12-11 09:43:11
End at: 2018-12-11 09:43:41
Local clock offset: 3.308 ms
Remote clock offset: 8.113 ms


# Below is generated by plot.py at 2018-12-11 10:48:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.41 Mbit/s
95th percentile per-packet one-way delay: 61.990 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 2.41 Mbit/s
95th percentile per-packet one-way delay: 61.990 ms
Loss rate: 0.07%
```
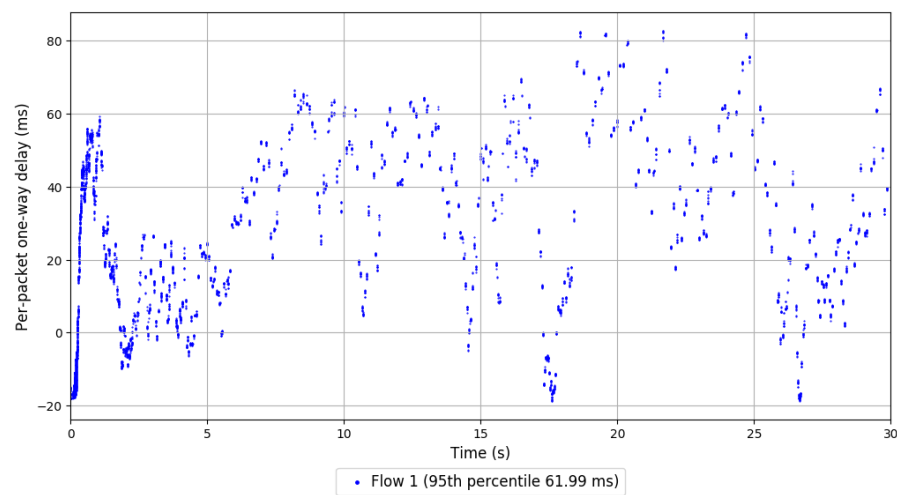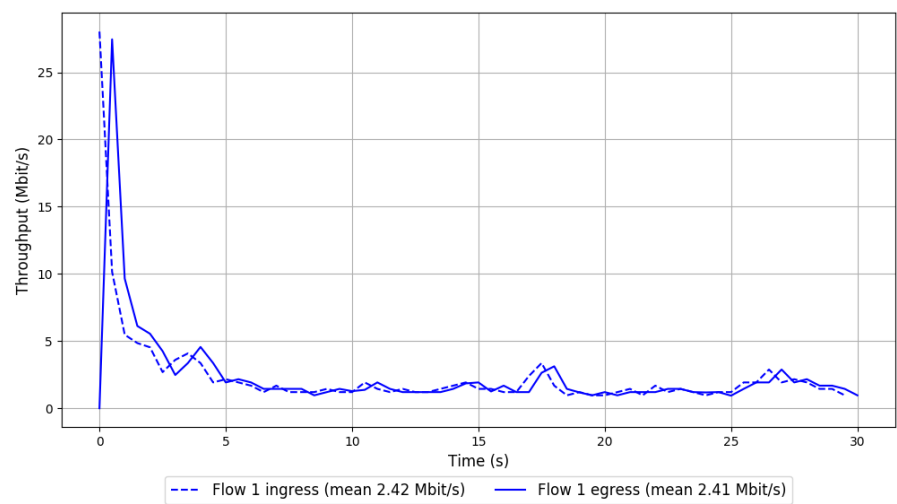
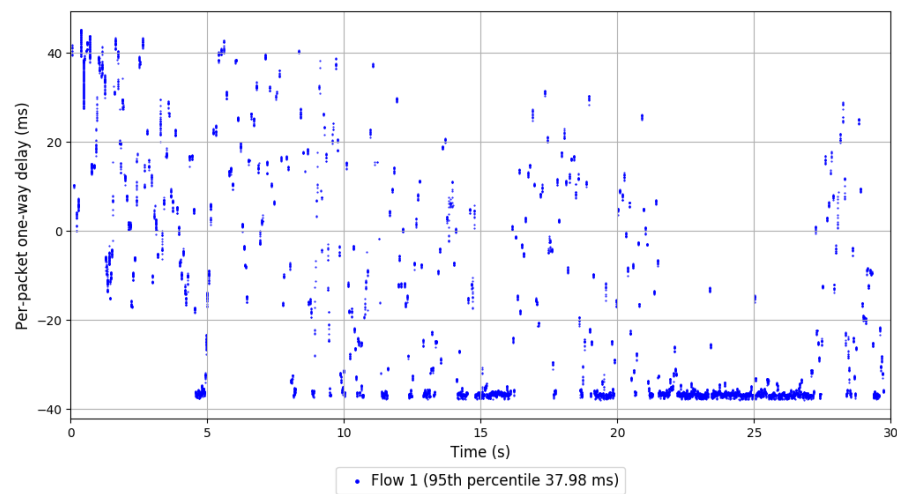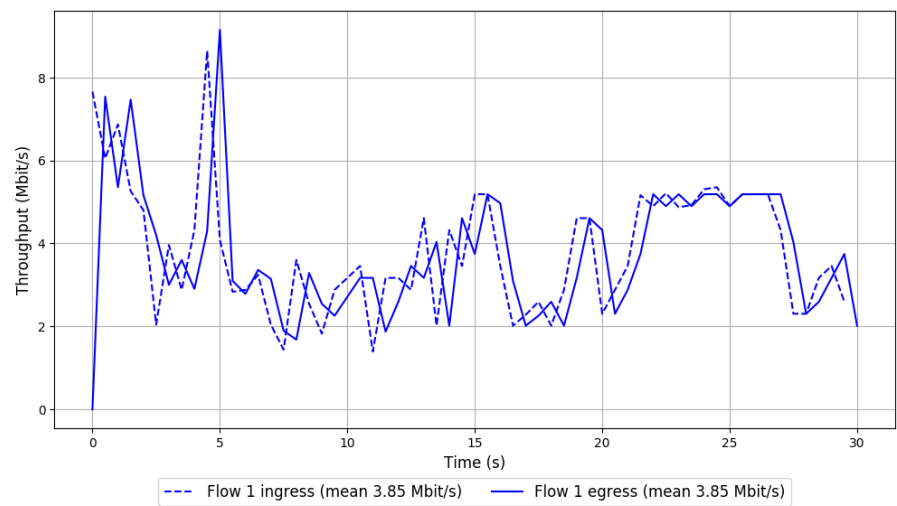Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2018-12-11 10:04:41
End at: 2018-12-11 10:05:11
Local clock offset: -0.751 ms
Remote clock offset: -7.124 ms


# Below is generated by plot.py at 2018-12-11 10:48:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.85 Mbit/s
95th percentile per-packet one-way delay: 37.976 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 3.85 Mbit/s
95th percentile per-packet one-way delay: 37.976 ms
Loss rate: 0.36%
```

Run 4: Report of Indigo — Data Link

Flow 1 ingress (mean 3.85 Mbit/s) --- Flow 1 egress (mean 3.85 Mbit/s)

Flow 1 (95th percentile 37.98 ms)

```
Run 5: Statistics of Indigo

Start at: 2018-12-11 10:26:11
End at: 2018-12-11 10:26:41
Local clock offset: 2.911 ms
Remote clock offset: -17.702 ms


# Below is generated by plot.py at 2018-12-11 10:48:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.07 Mbit/s
95th percentile per-packet one-way delay: 86.684 ms
Loss rate: 2.42%
-- Flow 1:
Average throughput: 1.07 Mbit/s
95th percentile per-packet one-way delay: 86.684 ms
Loss rate: 2.42%
```
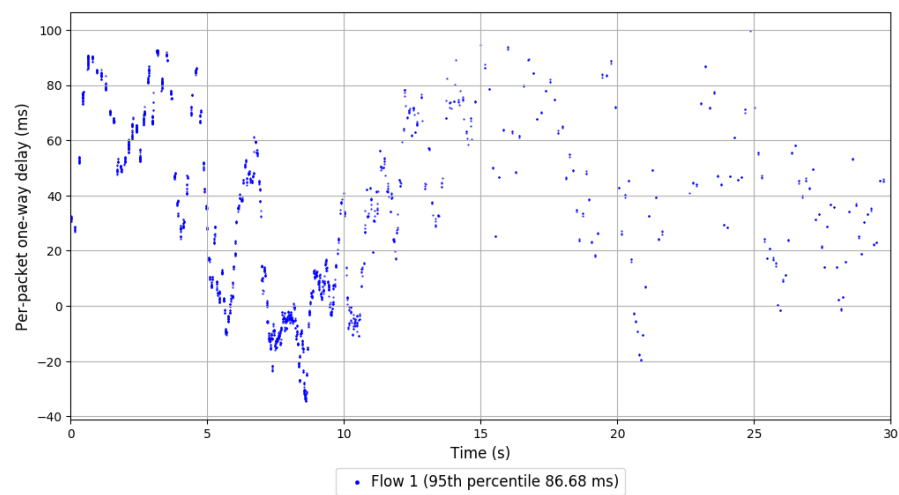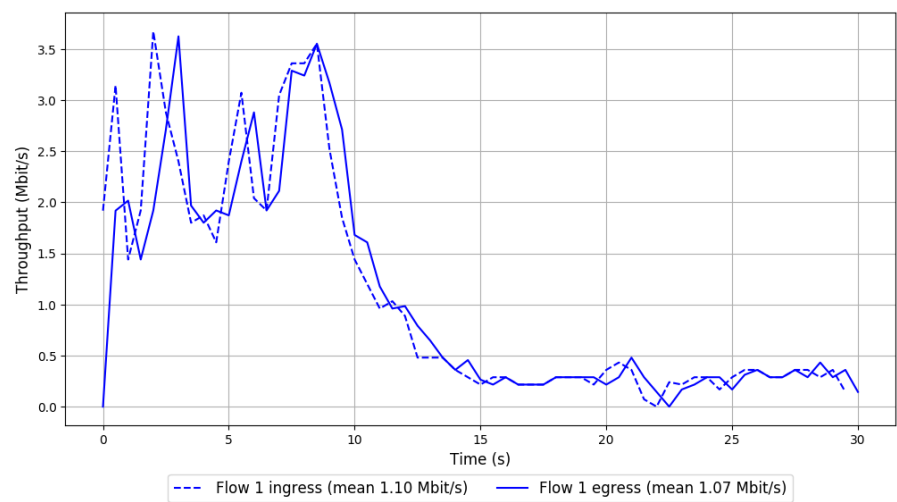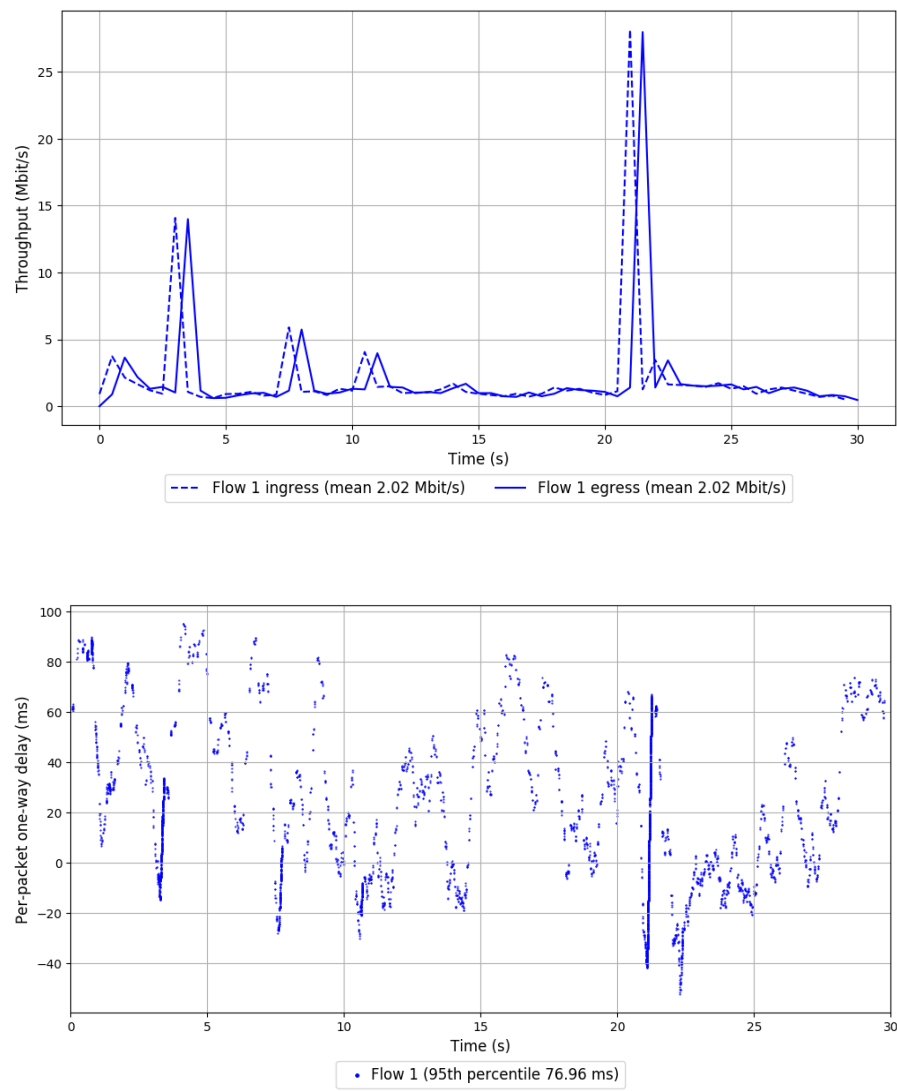
Run 5: Report of Indigo — Data Link

Flow 1 ingress (mean 1.10 Mbit/s)   Flow 1 egress (mean 1.07 Mbit/s)

Flow 1 (95th percentile 86.68 ms)

```
Run 1: Statistics of Indigo-MusesD

Start at: 2018-12-11 09:16:09
End at: 2018-12-11 09:16:39
Local clock offset: 5.552 ms
Remote clock offset: -32.613 ms


# Below is generated by plot.py at 2018-12-11 10:48:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.02 Mbit/s
95th percentile per-packet one-way delay: 76.963 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 2.02 Mbit/s
95th percentile per-packet one-way delay: 76.963 ms
Loss rate: 0.33%
```

Run 1: Report of Indigo-MusesD — Data Link

```
Run 2: Statistics of Indigo-MusesD

Start at: 2018-12-11 09:37:35
End at: 2018-12-11 09:38:05
Local clock offset: 4.649 ms
Remote clock offset: -5.767 ms


# Below is generated by plot.py at 2018-12-11 10:48:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 32.05 Mbit/s
95th percentile per-packet one-way delay: -7.470 ms
Loss rate: 0.22%
-- Flow 1:
Average throughput: 32.05 Mbit/s
95th percentile per-packet one-way delay: -7.470 ms
Loss rate: 0.22%
```
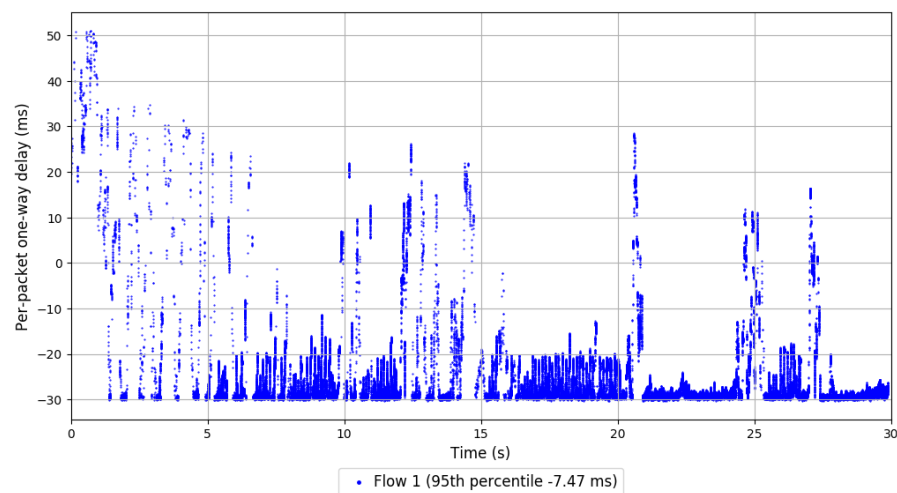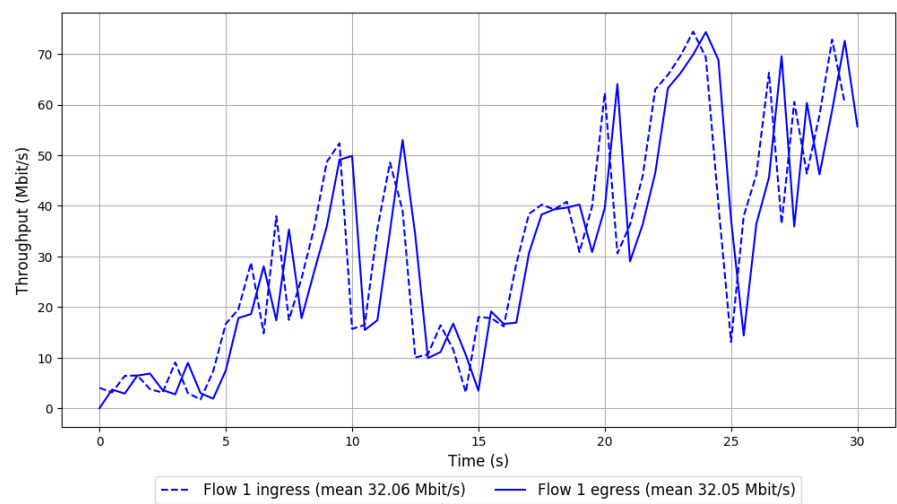
Run 2: Report of Indigo-MusesD — Data Link

```
Run 3: Statistics of Indigo-MusesD

Start at: 2018-12-11 09:59:02
End at: 2018-12-11 09:59:32
Local clock offset: 0.44 ms
Remote clock offset: 0.917 ms


# Below is generated by plot.py at 2018-12-11 10:48:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.73 Mbit/s
95th percentile per-packet one-way delay: 48.954 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 5.73 Mbit/s
95th percentile per-packet one-way delay: 48.954 ms
Loss rate: 0.02%
```
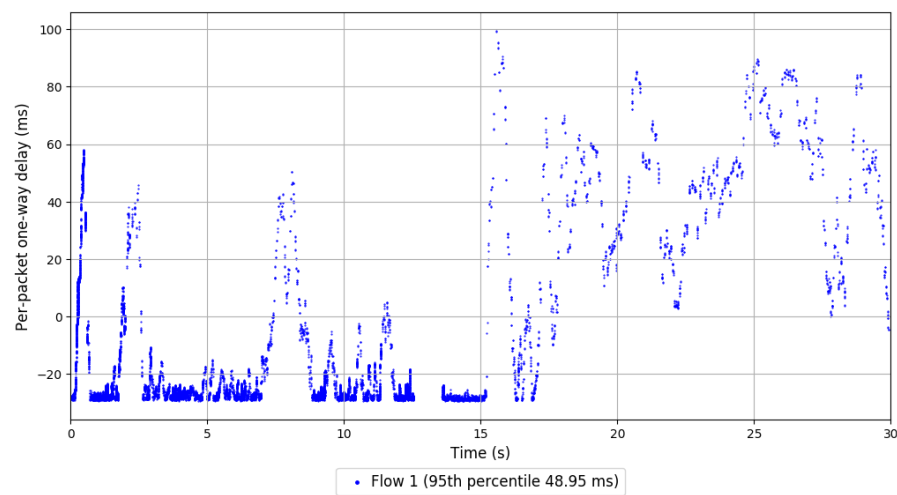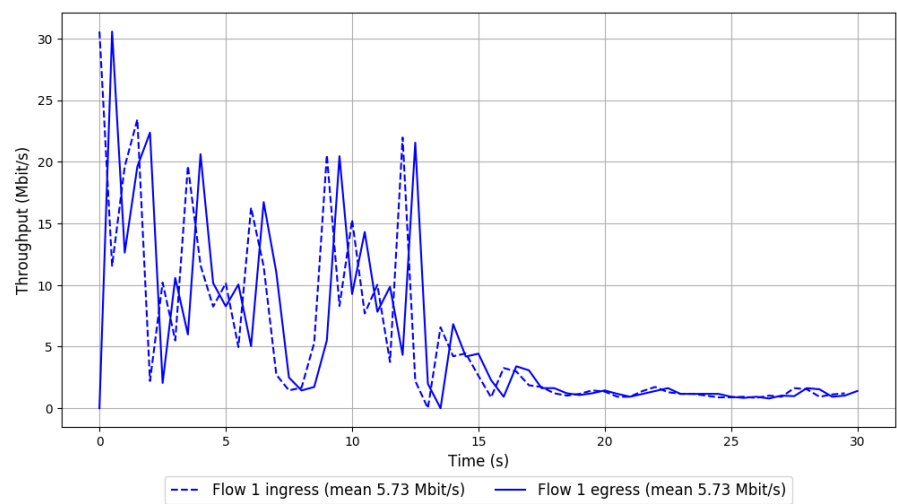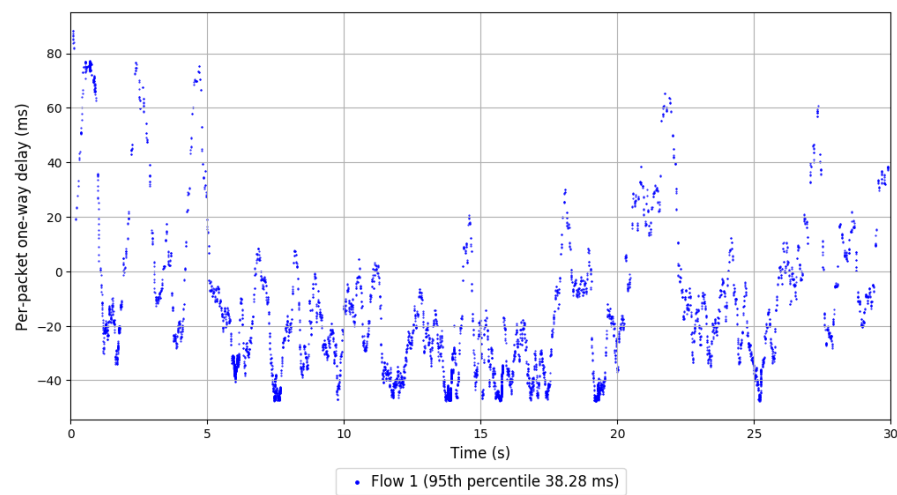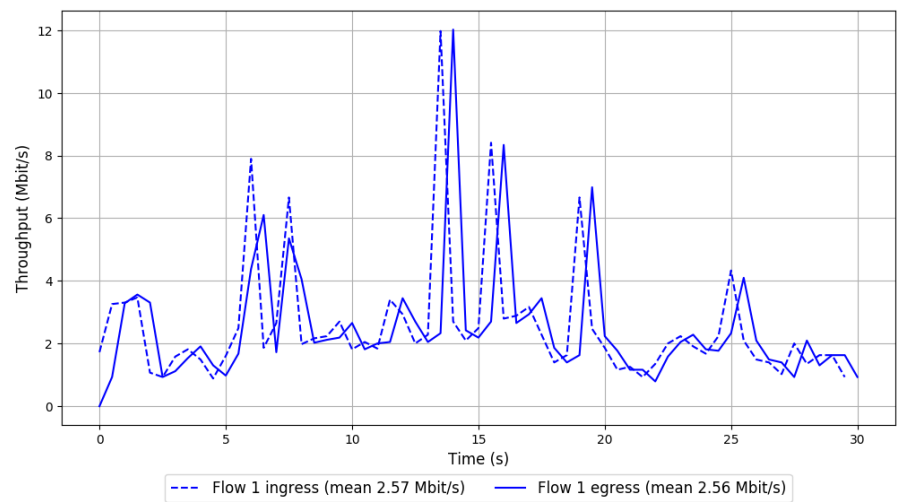
Run 3: Report of Indigo-MusesD — Data Link

```
Run 4: Statistics of Indigo-MusesD

Start at: 2018-12-11 10:20:33
End at: 2018-12-11 10:21:03
Local clock offset: 0.673 ms
Remote clock offset: -14.499 ms


# Below is generated by plot.py at 2018-12-11 10:48:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.56 Mbit/s
95th percentile per-packet one-way delay: 38.278 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 2.56 Mbit/s
95th percentile per-packet one-way delay: 38.278 ms
Loss rate: 0.59%
```

Run 4: Report of Indigo-MusesD — Data Link

```
Run 5: Statistics of Indigo-MusesD

Start at: 2018-12-11 10:41:56
End at: 2018-12-11 10:42:26
Local clock offset: 2.501 ms
Remote clock offset: -7.557 ms


# Below is generated by plot.py at 2018-12-11 10:48:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.24 Mbit/s
95th percentile per-packet one-way delay: 4.643 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 6.24 Mbit/s
95th percentile per-packet one-way delay: 4.643 ms
Loss rate: 0.07%
```
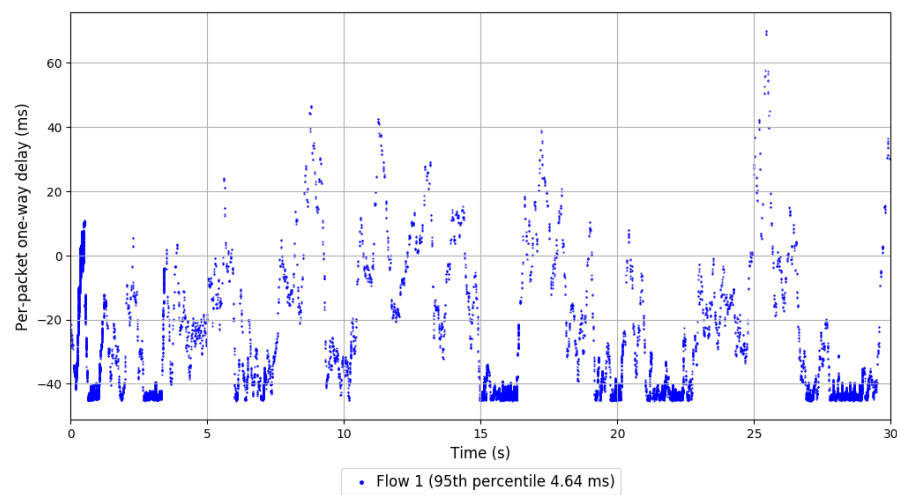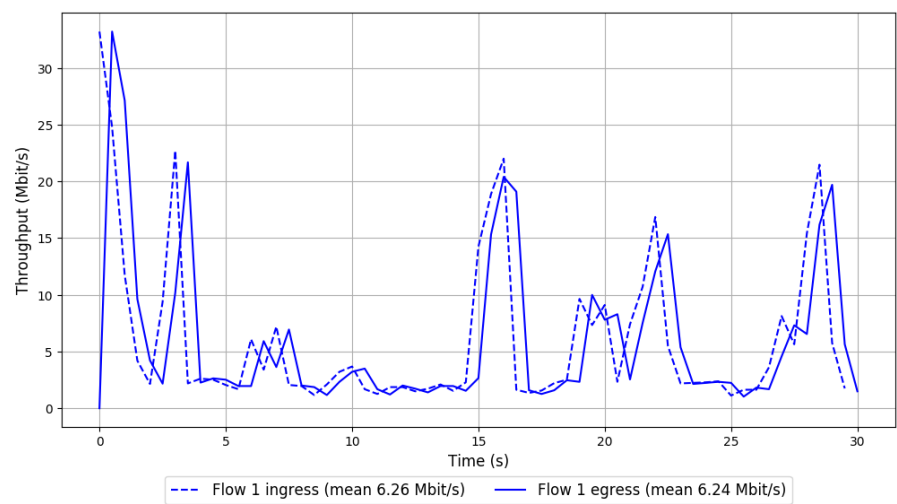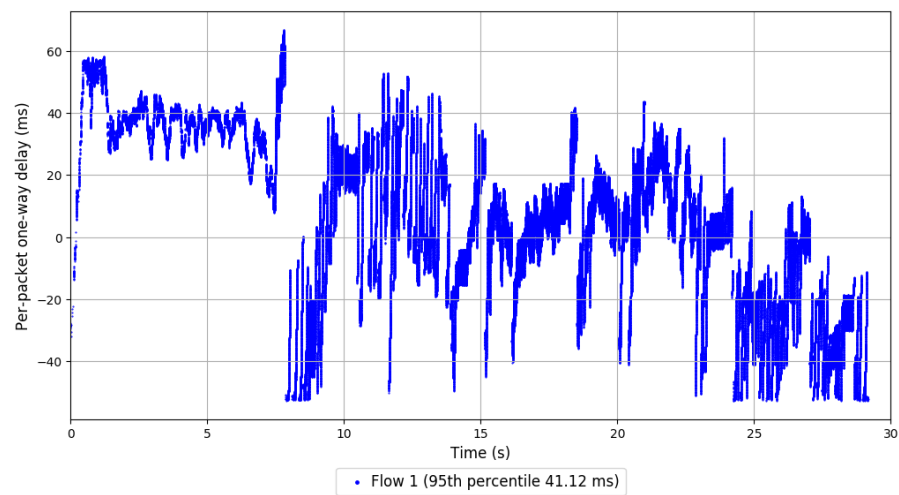
Run 5: Report of Indigo-MusesD — Data Link

Flow 1 ingress (mean 6.26 Mbit/s)   Flow 1 egress (mean 6.24 Mbit/s)

Flow 1 (95th percentile 4.64 ms)

```
Run 1: Statistics of Indigo-MusesT

Start at: 2018-12-11 09:09:21
End at: 2018-12-11 09:09:51
Local clock offset: 6.797 ms
Remote clock offset: -31.063 ms


# Below is generated by plot.py at 2018-12-11 10:49:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 80.68 Mbit/s
95th percentile per-packet one-way delay: 41.115 ms
Loss rate: 20.63%
-- Flow 1:
Average throughput: 80.68 Mbit/s
95th percentile per-packet one-way delay: 41.115 ms
Loss rate: 20.63%
```
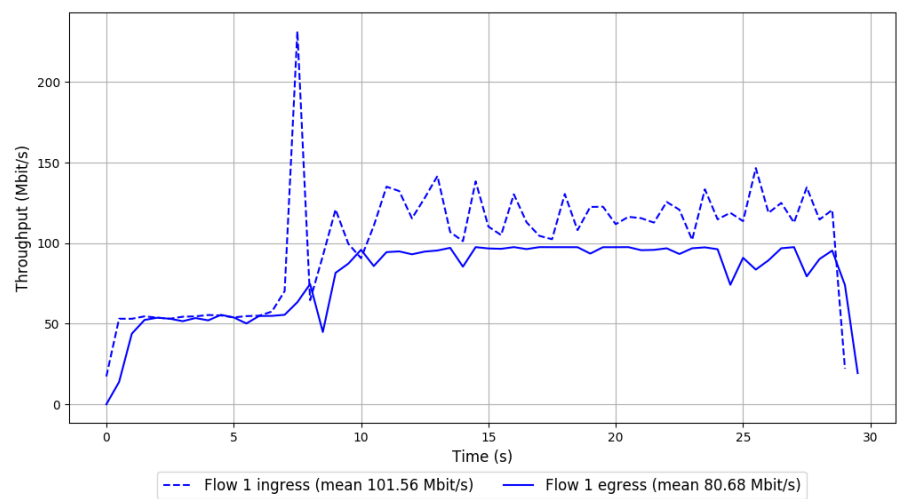
Run 1: Report of Indigo-MusesT — Data Link

```
Run 2: Statistics of Indigo-MusesT

Start at: 2018-12-11 09:30:52
End at: 2018-12-11 09:31:22
Local clock offset: 4.057 ms
Remote clock offset: -22.439 ms

# Below is generated by plot.py at 2018-12-11 10:49:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 60.11 Mbit/s
95th percentile per-packet one-way delay: 77.172 ms
Loss rate: 2.71%
-- Flow 1:
Average throughput: 60.11 Mbit/s
95th percentile per-packet one-way delay: 77.172 ms
Loss rate: 2.71%
```
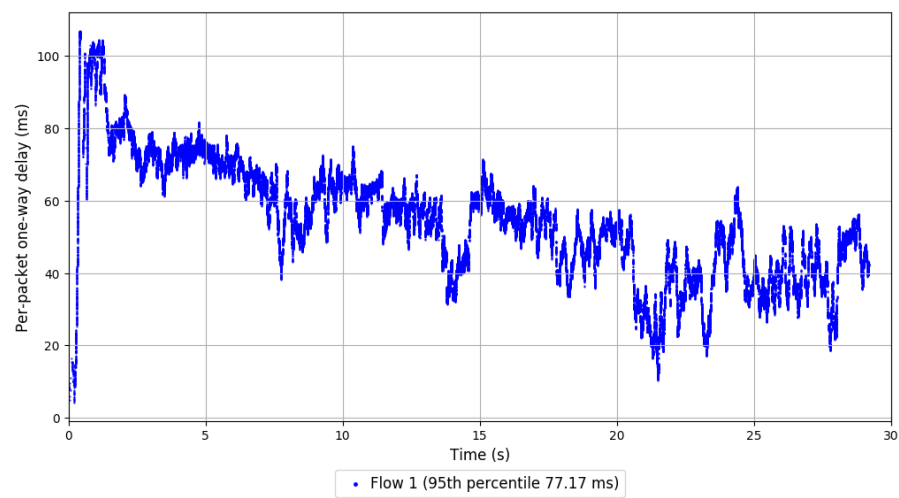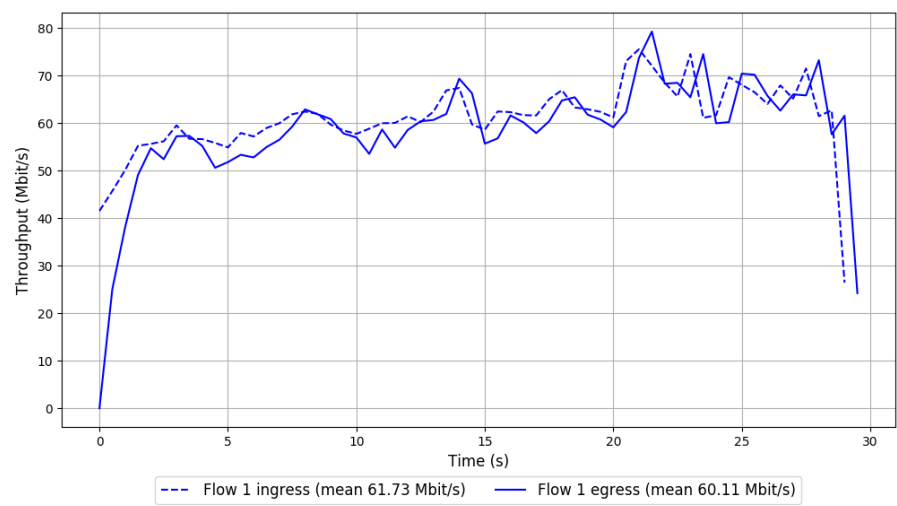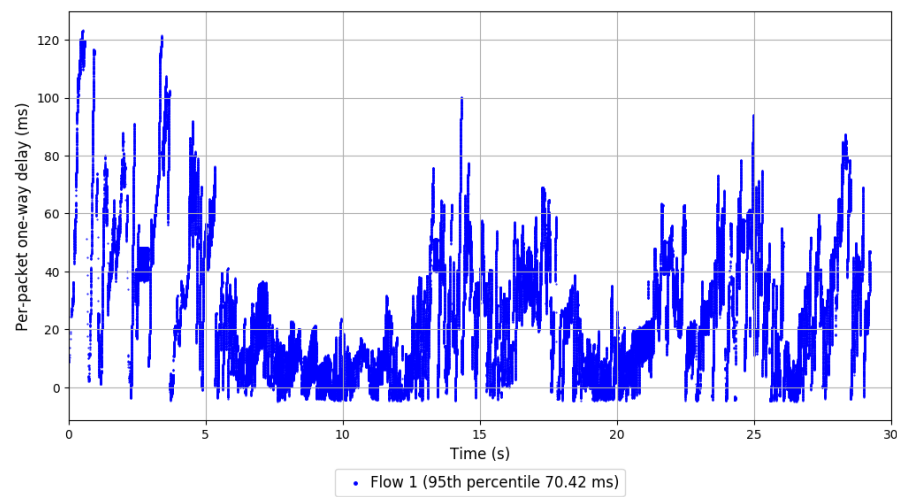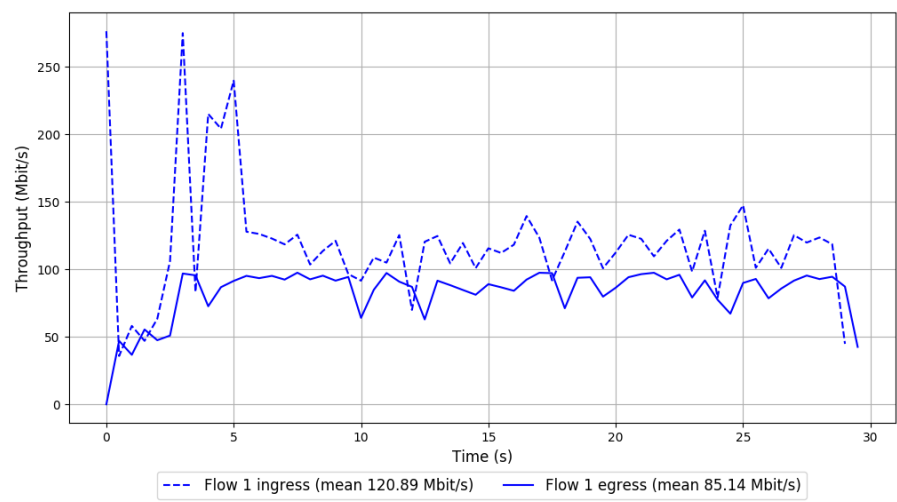
Run 2: Report of Indigo-MusesT — Data Link

```
Run 3: Statistics of Indigo-MusesT

Start at: 2018-12-11 09:52:10
End at: 2018-12-11 09:52:40
Local clock offset: -1.332 ms
Remote clock offset: 21.576 ms


# Below is generated by plot.py at 2018-12-11 10:49:10
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.14 Mbit/s
95th percentile per-packet one-way delay: 70.417 ms
Loss rate: 29.51%
-- Flow 1:
Average throughput: 85.14 Mbit/s
95th percentile per-packet one-way delay: 70.417 ms
Loss rate: 29.51%
```

Run 3: Report of Indigo-MusesT — Data Link

```
Run 4: Statistics of Indigo-MusesT

Start at: 2018-12-11 10:13:47
End at: 2018-12-11 10:14:17
Local clock offset: 2.807 ms
Remote clock offset: -25.404 ms


# Below is generated by plot.py at 2018-12-11 10:49:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 90.46 Mbit/s
95th percentile per-packet one-way delay: 28.907 ms
Loss rate: 20.15%
-- Flow 1:
Average throughput: 90.46 Mbit/s
95th percentile per-packet one-way delay: 28.907 ms
Loss rate: 20.15%
```
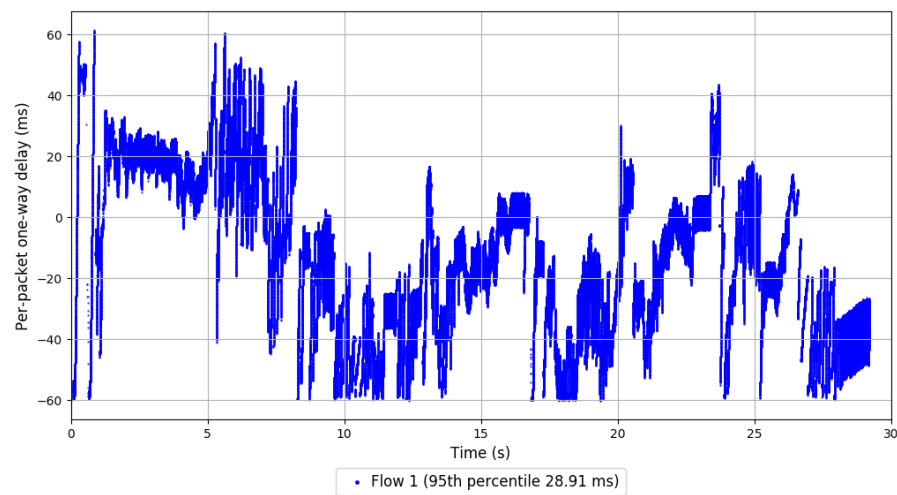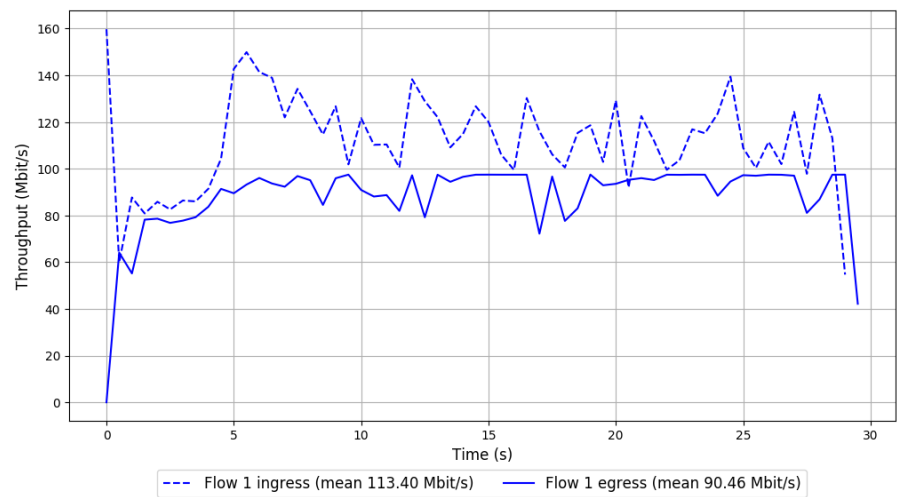
Run 4: Report of Indigo-MusesT — Data Link

Flow 1 ingress (mean 113.40 Mbit/s)   Flow 1 egress (mean 90.46 Mbit/s)

• Flow 1 (95th percentile 28.91 ms)

```
Run 5: Statistics of Indigo-MusesT

Start at: 2018-12-11 10:35:09
End at: 2018-12-11 10:35:39
Local clock offset: 0.875 ms
Remote clock offset: -16.979 ms


# Below is generated by plot.py at 2018-12-11 10:49:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 63.14 Mbit/s
95th percentile per-packet one-way delay: 57.049 ms
Loss rate: 4.83%
-- Flow 1:
Average throughput: 63.14 Mbit/s
95th percentile per-packet one-way delay: 57.049 ms
Loss rate: 4.83%
```
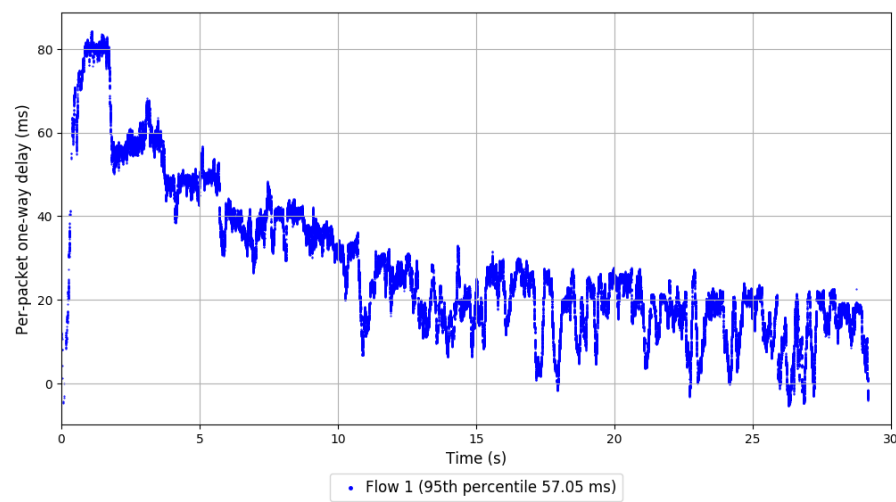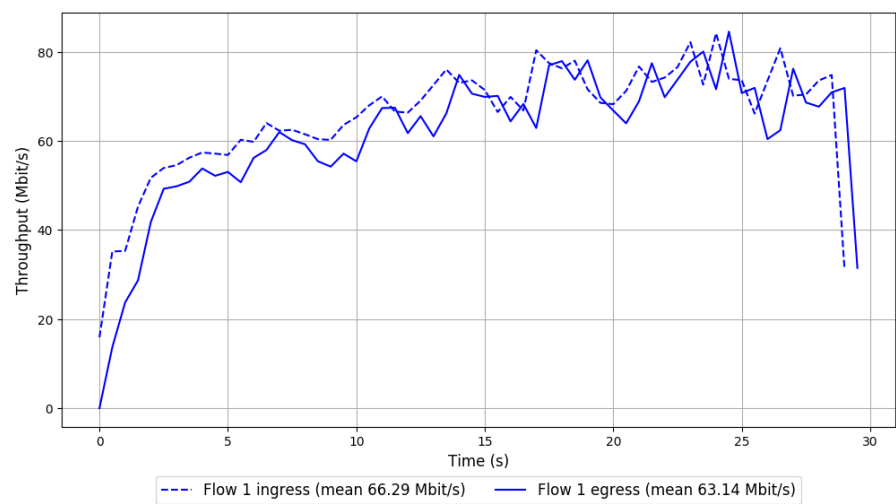
Run 5: Report of Indigo-MusesT — Data Link

Flow 1 ingress (mean 66.29 Mbit/s) ----- Flow 1 egress (mean 63.14 Mbit/s) ———
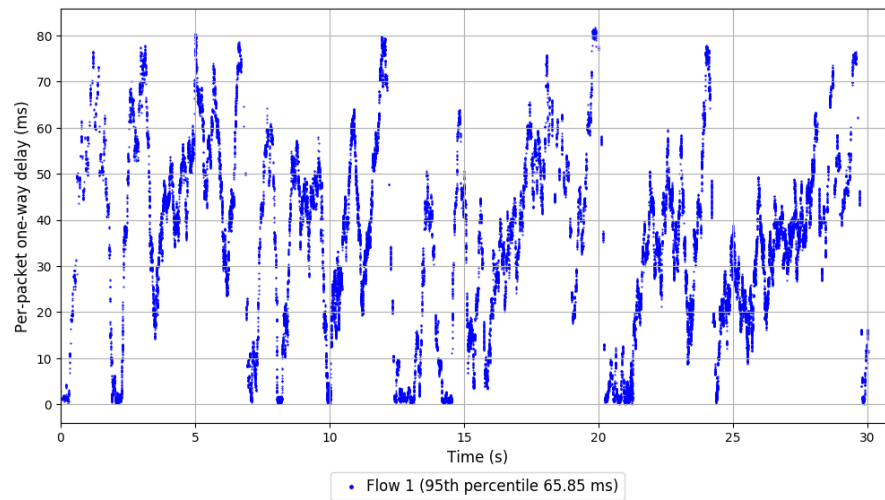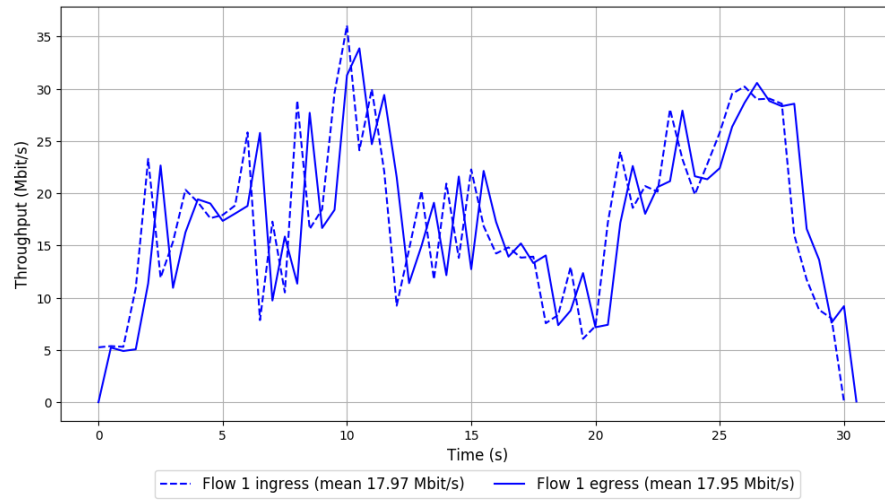

Flow 1 (95th percentile 57.05 ms)

```
Run 1: Statistics of LEDBAT

Start at: 2018-12-11 09:01:26
End at: 2018-12-11 09:01:56
Local clock offset: 1.731 ms
Remote clock offset: 13.472 ms


# Below is generated by plot.py at 2018-12-11 10:49:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 17.95 Mbit/s
95th percentile per-packet one-way delay: 65.853 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 17.95 Mbit/s
95th percentile per-packet one-way delay: 65.853 ms
Loss rate: 0.10%
```

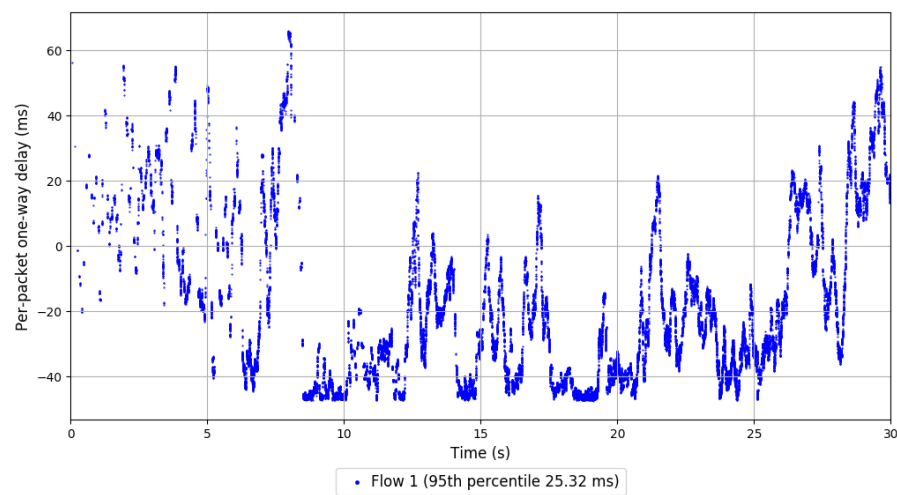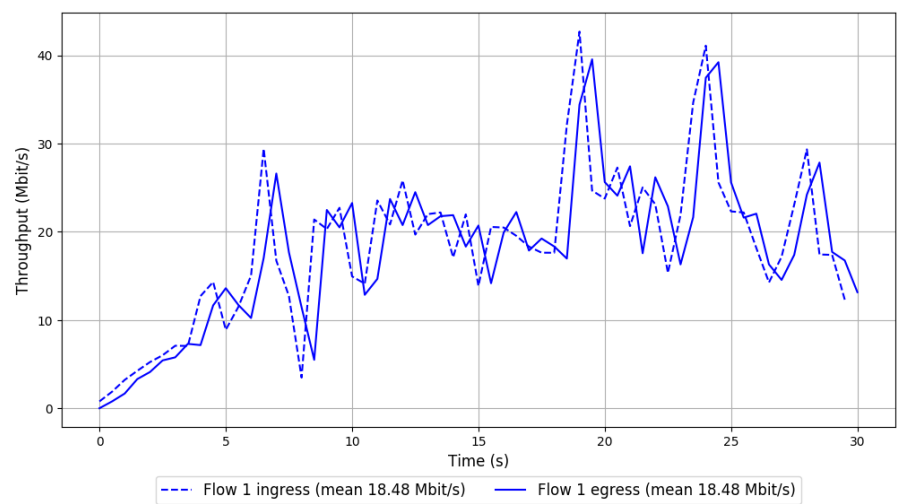# Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-12-11 09:22:55
End at: 2018-12-11 09:23:25
Local clock offset: 5.384 ms
Remote clock offset: -24.76 ms


# Below is generated by plot.py at 2018-12-11 10:49:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 18.48 Mbit/s
95th percentile per-packet one-way delay: 25.316 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 18.48 Mbit/s
95th percentile per-packet one-way delay: 25.316 ms
Loss rate: 0.10%
```

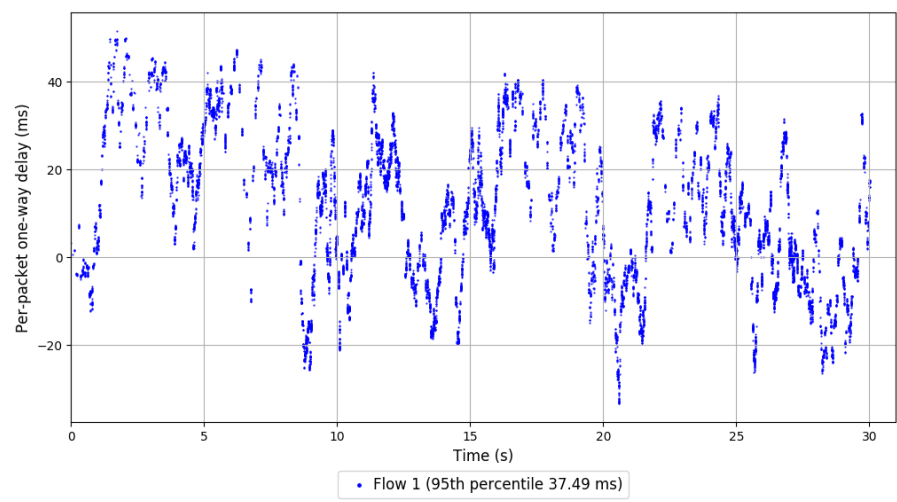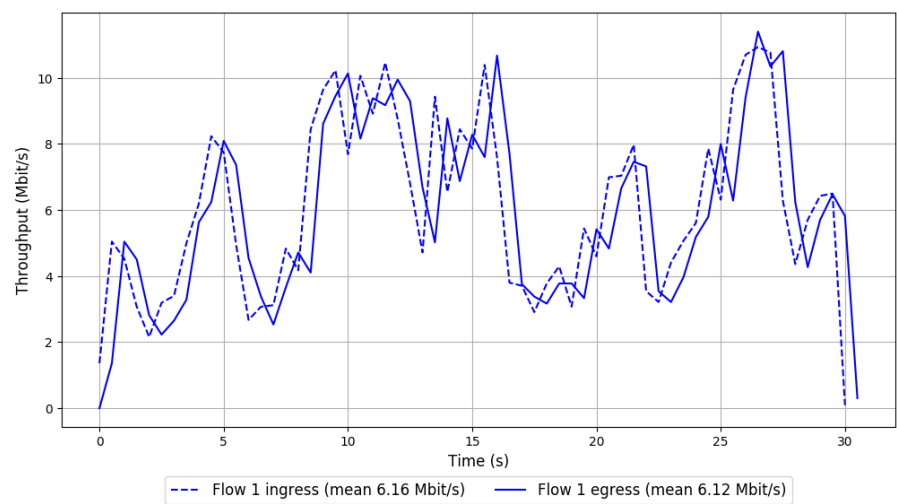Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-12-11 09:44:17
End at: 2018-12-11 09:44:47
Local clock offset: 0.997 ms
Remote clock offset: -8.334 ms


# Below is generated by plot.py at 2018-12-11 10:49:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.12 Mbit/s
95th percentile per-packet one-way delay: 37.492 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 6.12 Mbit/s
95th percentile per-packet one-way delay: 37.492 ms
Loss rate: 0.59%
```
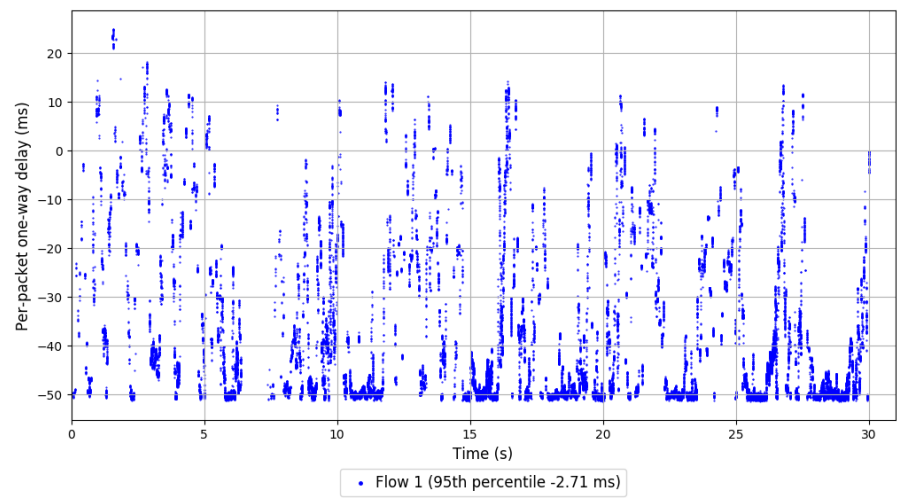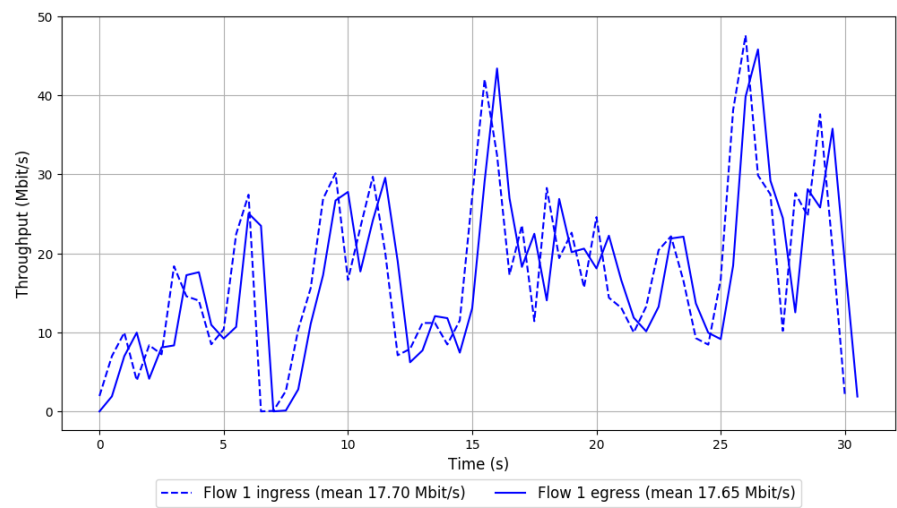
Run 3: Report of LEDBAT — Data Link

```
Run 4: Statistics of LEDBAT

Start at: 2018-12-11 10:05:47
End at: 2018-12-11 10:06:17
Local clock offset: -2.727 ms
Remote clock offset: -22.248 ms

# Below is generated by plot.py at 2018-12-11 10:49:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 17.65 Mbit/s
95th percentile per-packet one-way delay: -2.713 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 17.65 Mbit/s
95th percentile per-packet one-way delay: -2.713 ms
Loss rate: 0.16%
```
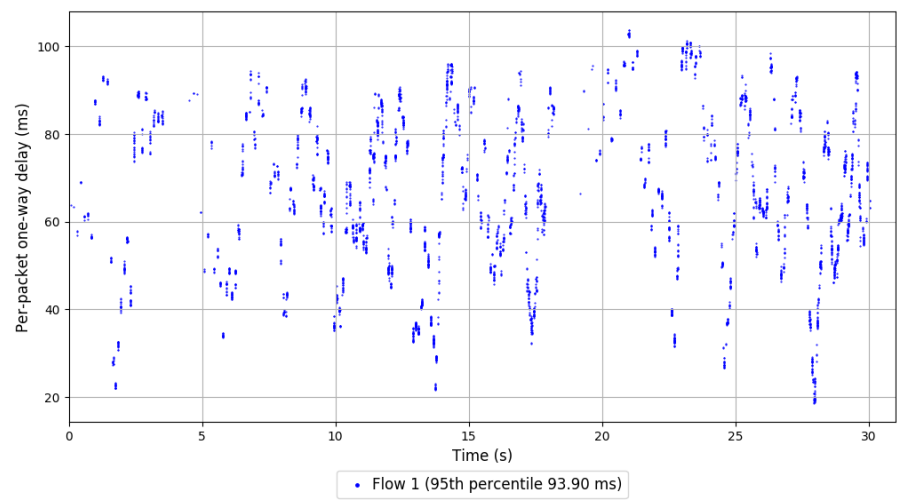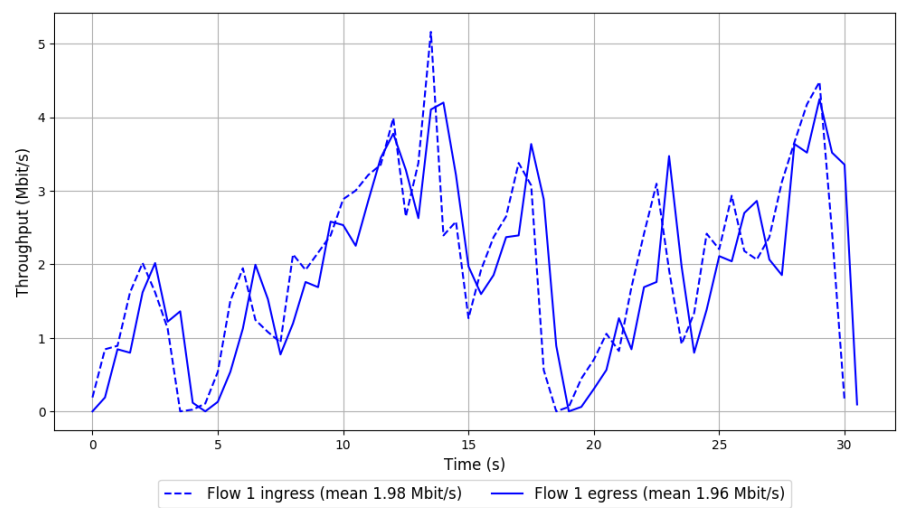
Run 4: Report of LEDBAT — Data Link

```
Run 5: Statistics of LEDBAT

Start at: 2018-12-11 10:27:19
End at: 2018-12-11 10:27:49
Local clock offset: -7.194 ms
Remote clock offset: -13.678 ms


# Below is generated by plot.py at 2018-12-11 10:49:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.96 Mbit/s
95th percentile per-packet one-way delay: 93.898 ms
Loss rate: 1.09%
-- Flow 1:
Average throughput: 1.96 Mbit/s
95th percentile per-packet one-way delay: 93.898 ms
Loss rate: 1.09%
```

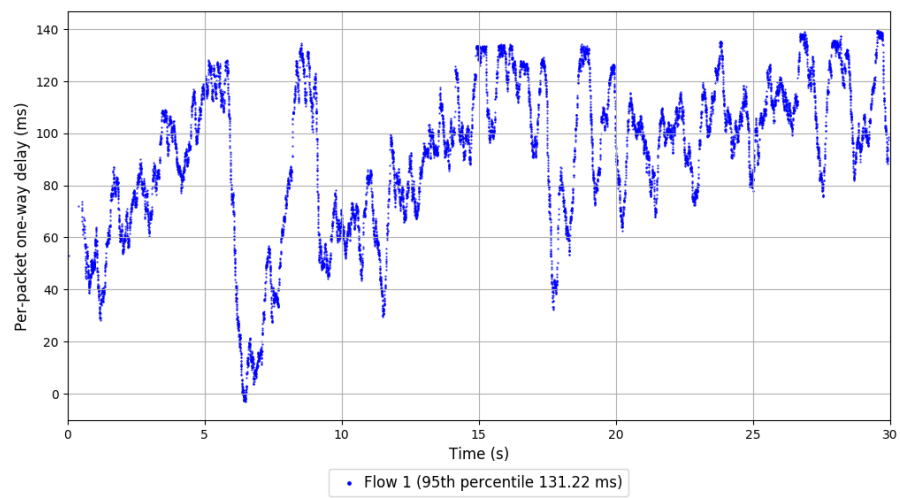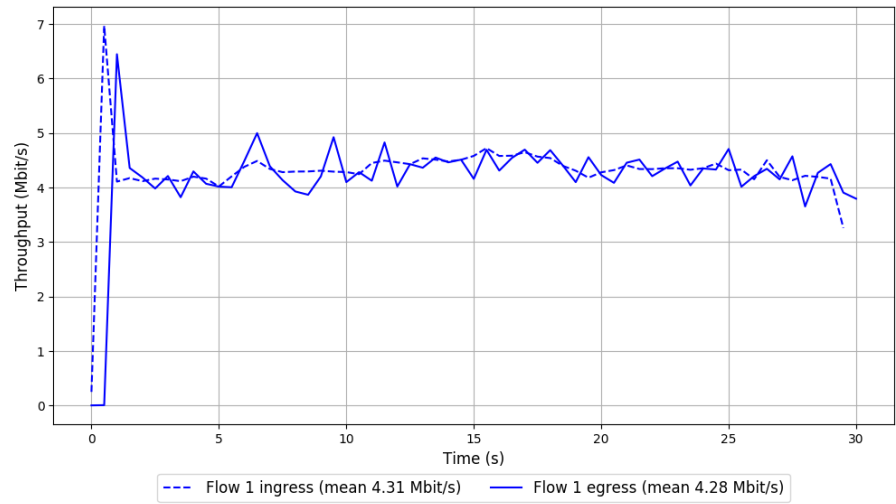Run 5: Report of LEDBAT — Data Link

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-12-11 09:13:52
End at: 2018-12-11 09:14:22
Local clock offset: 3.541 ms
Remote clock offset: 15.924 ms


# Below is generated by plot.py at 2018-12-11 10:49:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.28 Mbit/s
95th percentile per-packet one-way delay: 131.220 ms
Loss rate: 0.81%
-- Flow 1:
Average throughput: 4.28 Mbit/s
95th percentile per-packet one-way delay: 131.220 ms
Loss rate: 0.81%
```

Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-12-11 09:35:22
End at: 2018-12-11 09:35:52
Local clock offset: 5.412 ms
Remote clock offset: -7.509 ms


# Below is generated by plot.py at 2018-12-11 10:49:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.50 Mbit/s
95th percentile per-packet one-way delay: 61.565 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 8.50 Mbit/s
95th percentile per-packet one-way delay: 61.565 ms
Loss rate: 0.13%
```
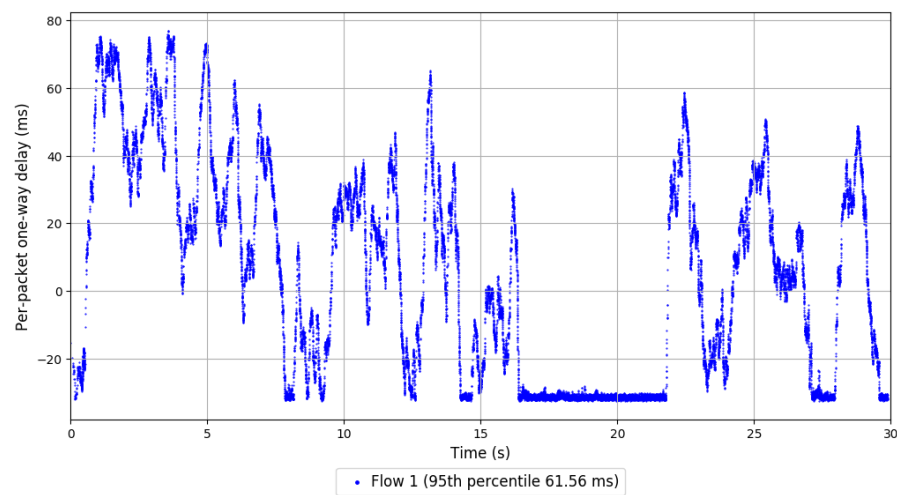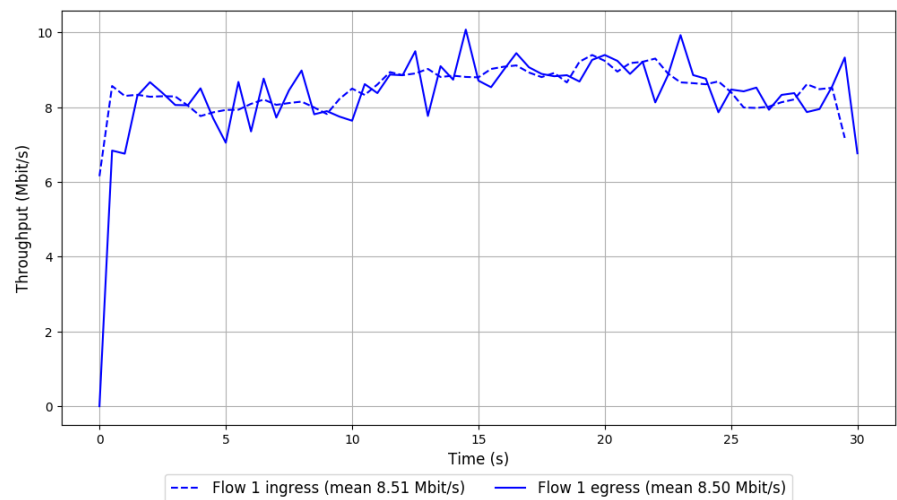
Run 2: Report of PCC-Allegro — Data Link

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-12-11 09:56:46
End at: 2018-12-11 09:57:16
Local clock offset: 0.786 ms
Remote clock offset: -6.754 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 64.07 Mbit/s
95th percentile per-packet one-way delay: 33.929 ms
Loss rate: 1.35%
-- Flow 1:
Average throughput: 64.07 Mbit/s
95th percentile per-packet one-way delay: 33.929 ms
Loss rate: 1.35%
```
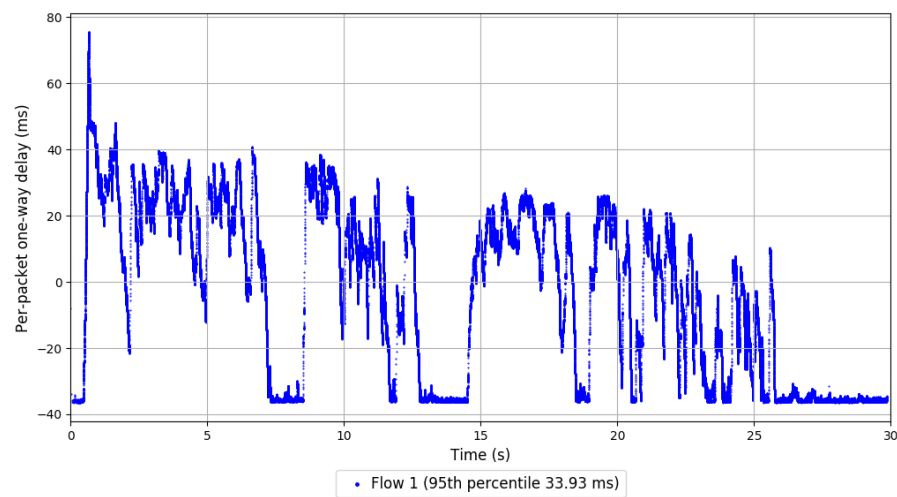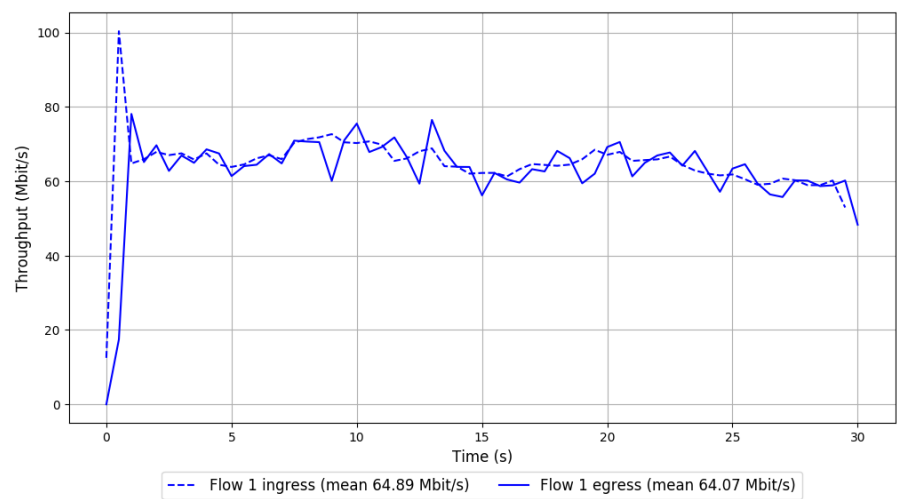
Run 3: Report of PCC-Allegro — Data Link

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-12-11 10:18:20
End at: 2018-12-11 10:18:50
Local clock offset: -5.749 ms
Remote clock offset: -19.358 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.33 Mbit/s
95th percentile per-packet one-way delay: 45.795 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 2.33 Mbit/s
95th percentile per-packet one-way delay: 45.795 ms
Loss rate: 0.21%
```
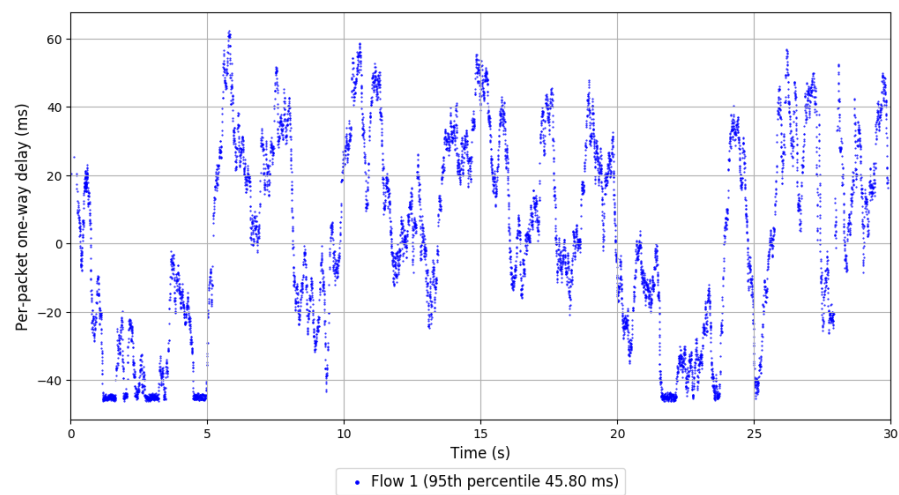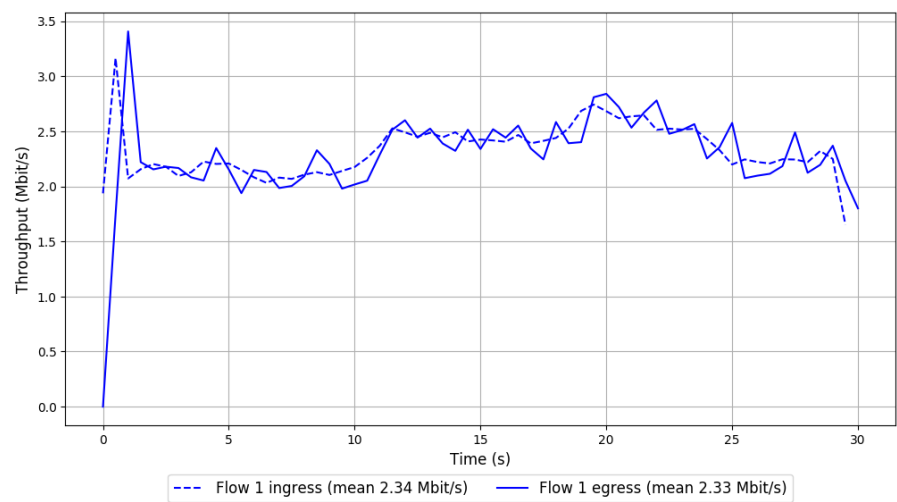
Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 2.34 Mbit/s)   Flow 1 egress (mean 2.33 Mbit/s)

Flow 1 (95th percentile 45.80 ms)

```
Run 5: Statistics of PCC-Allegro

Start at: 2018-12-11 10:39:42
End at: 2018-12-11 10:40:12
Local clock offset: 2.839 ms
Remote clock offset: -11.991 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.34 Mbit/s
95th percentile per-packet one-way delay: 59.892 ms
Loss rate: 0.25%
-- Flow 1:
Average throughput: 4.34 Mbit/s
95th percentile per-packet one-way delay: 59.892 ms
Loss rate: 0.25%
```
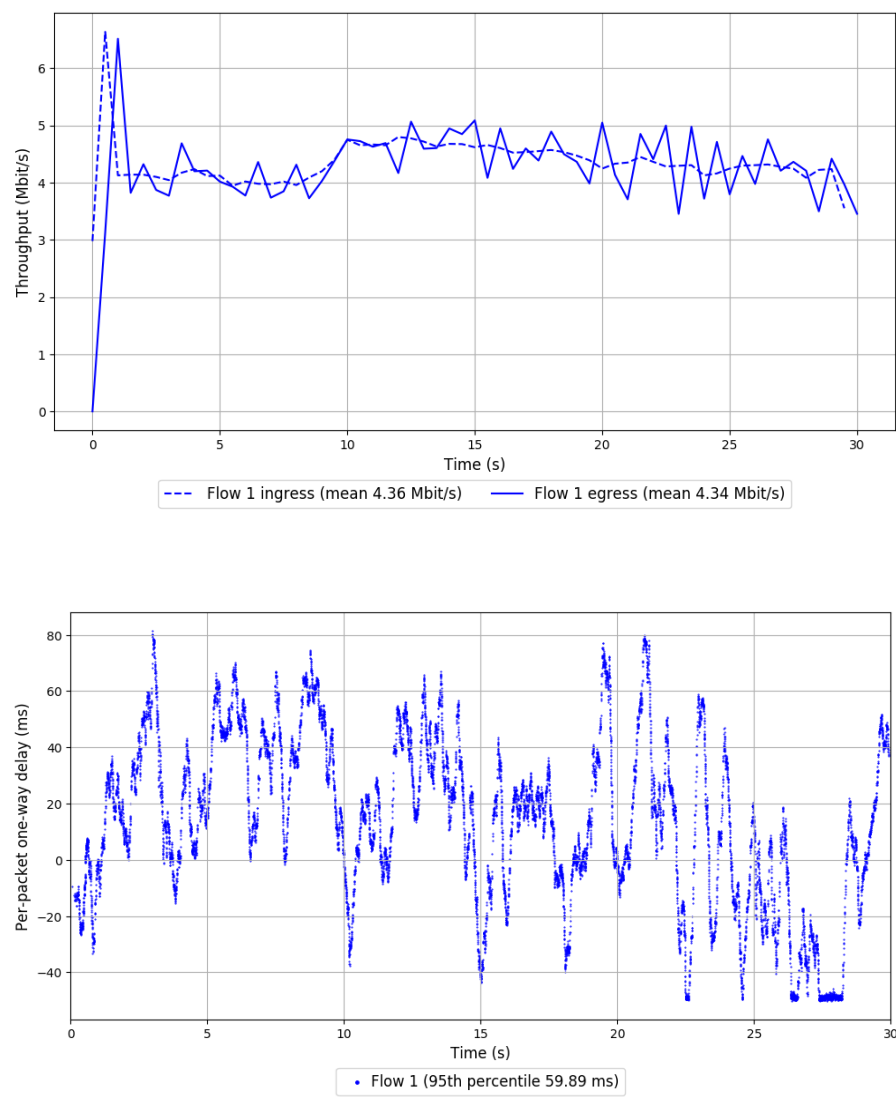
Run 5: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 4.36 Mbit/s)   Flow 1 egress (mean 4.34 Mbit/s)

Flow 1 (95th percentile 59.89 ms)
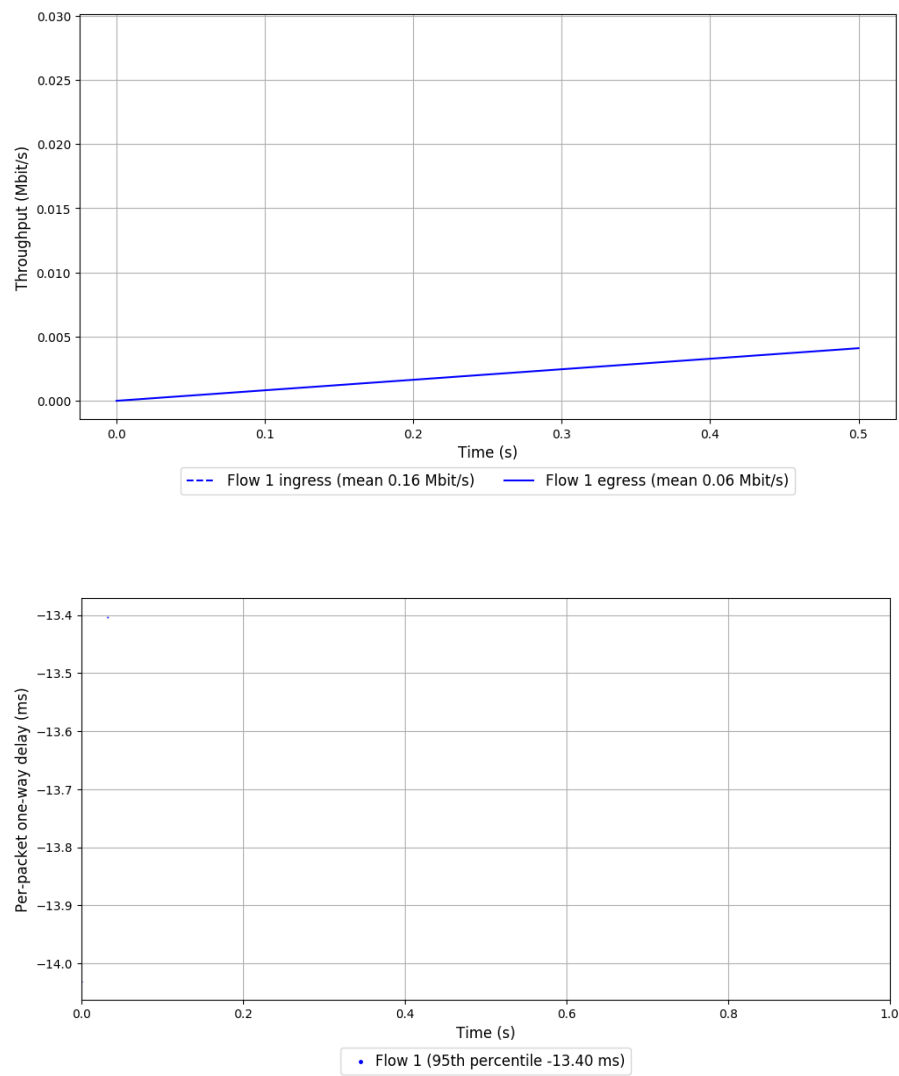
```
Run 1: Statistics of PCC-Expr

Start at: 2018-12-11 09:07:09
End at: 2018-12-11 09:07:39
Local clock offset: 2.361 ms
Remote clock offset: 1.952 ms
```
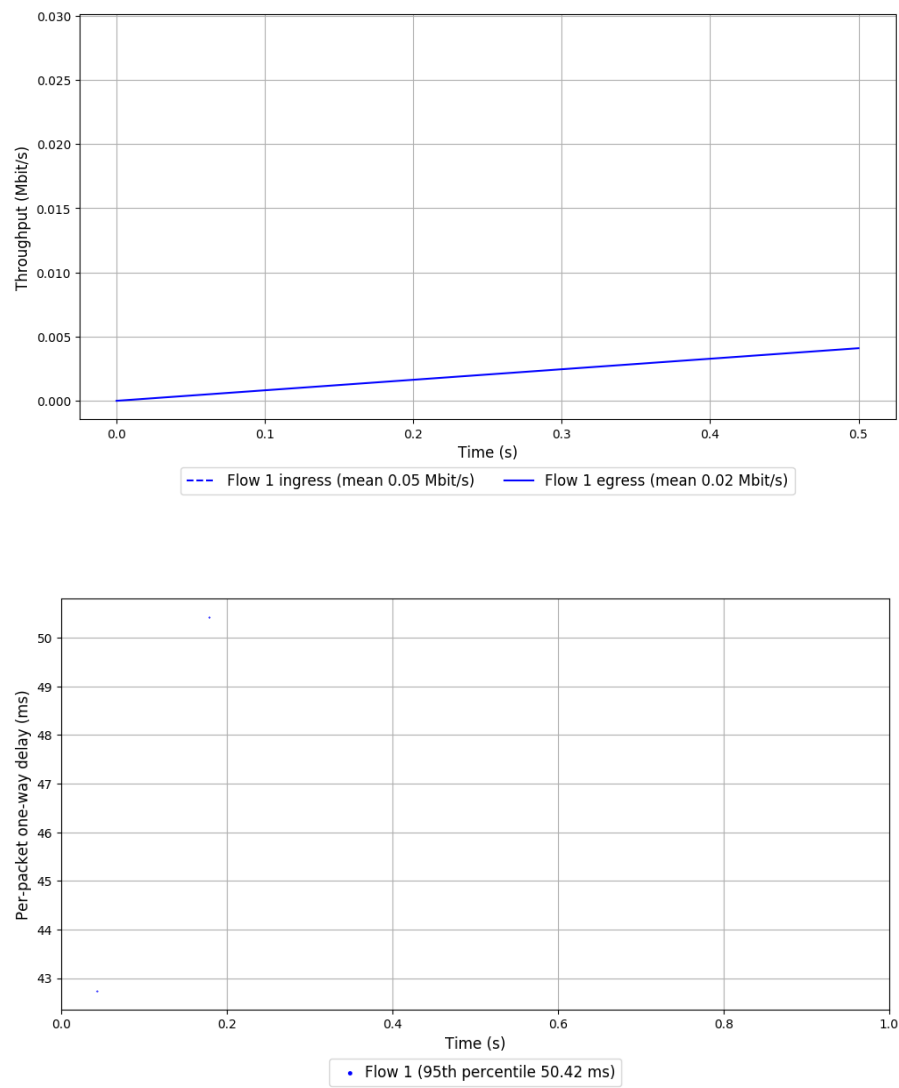
Run 1: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 0.16 Mbit/s)　　Flow 1 egress (mean 0.06 Mbit/s)

Flow 1 (95th percentile -13.40 ms)

```
Run 2: Statistics of PCC-Expr

Start at: 2018-12-11 09:28:38
End at: 2018-12-11 09:29:08
Local clock offset: 4.281 ms
Remote clock offset: -37.242 ms
```
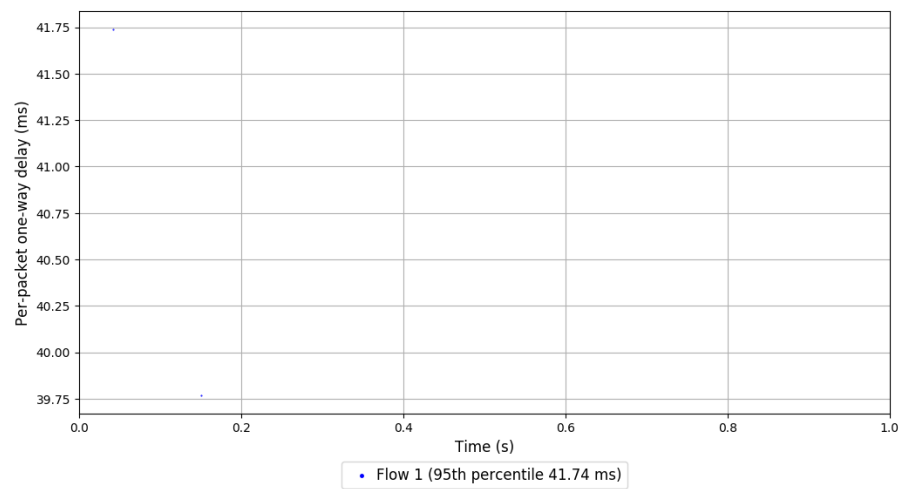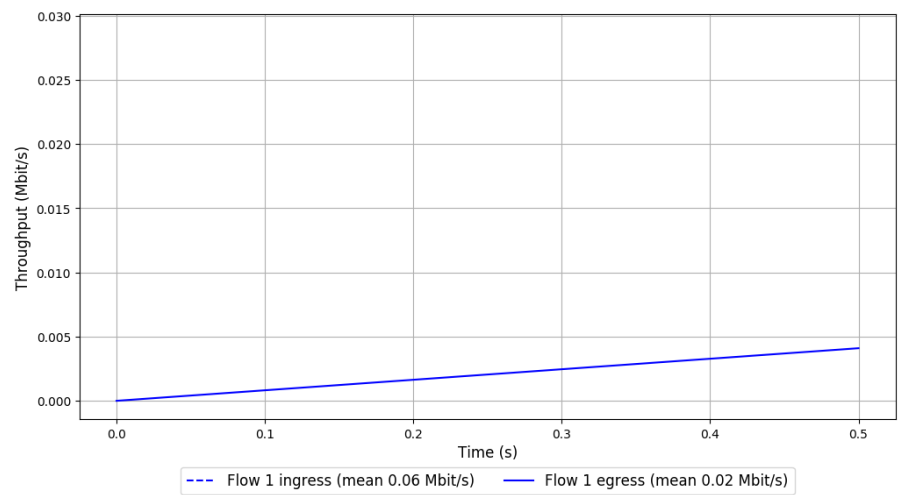
Run 2: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 0.05 Mbit/s) --- Flow 1 egress (mean 0.02 Mbit/s)

Flow 1 (95th percentile 50.42 ms)

```
Run 3: Statistics of PCC-Expr

Start at: 2018-12-11 09:49:58
End at: 2018-12-11 09:50:28
Local clock offset: 2.12 ms
Remote clock offset: -16.602 ms
```
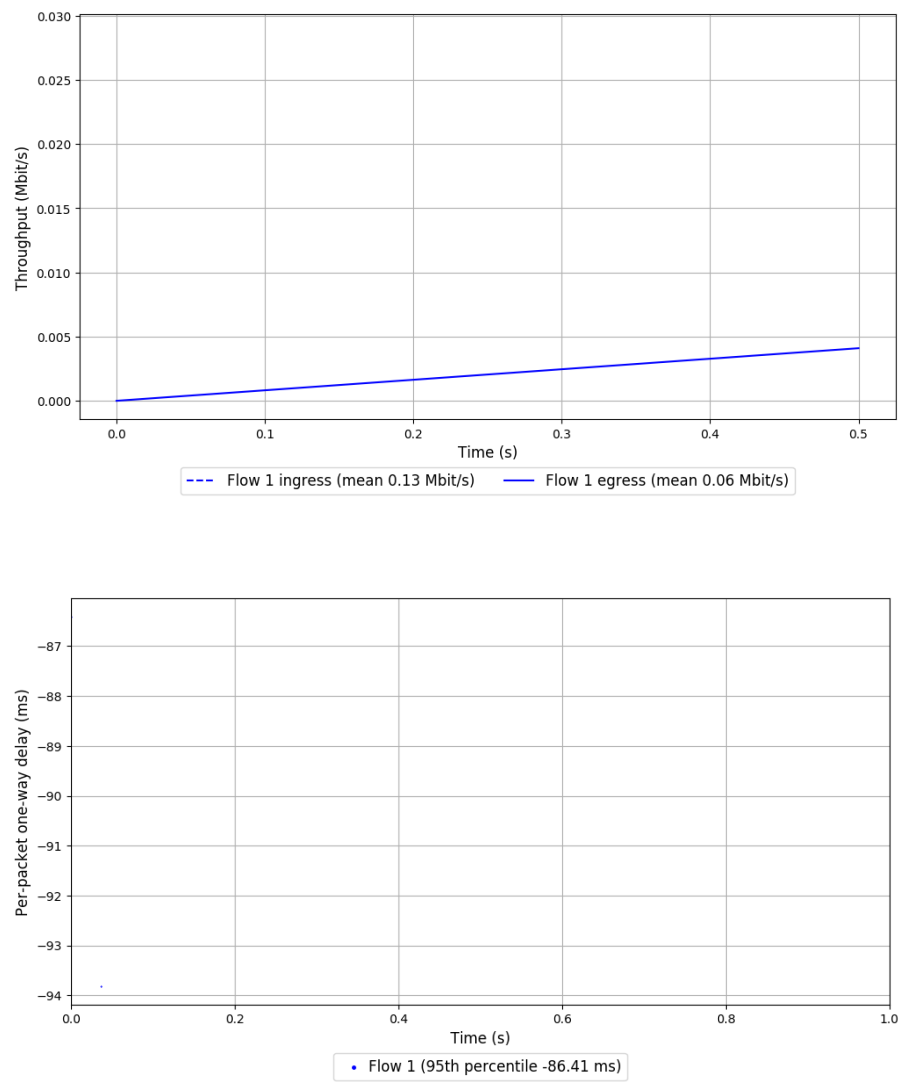
Run 3: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 0.06 Mbit/s) --- Flow 1 egress (mean 0.02 Mbit/s) ——

Flow 1 (95th percentile 41.74 ms)

```
Run 4: Statistics of PCC-Expr

Start at: 2018-12-11 10:11:35
End at: 2018-12-11 10:12:05
Local clock offset: -1.029 ms
Remote clock offset: -73.494 ms
```

Run 4: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 0.13 Mbit/s)   Flow 1 egress (mean 0.06 Mbit/s)

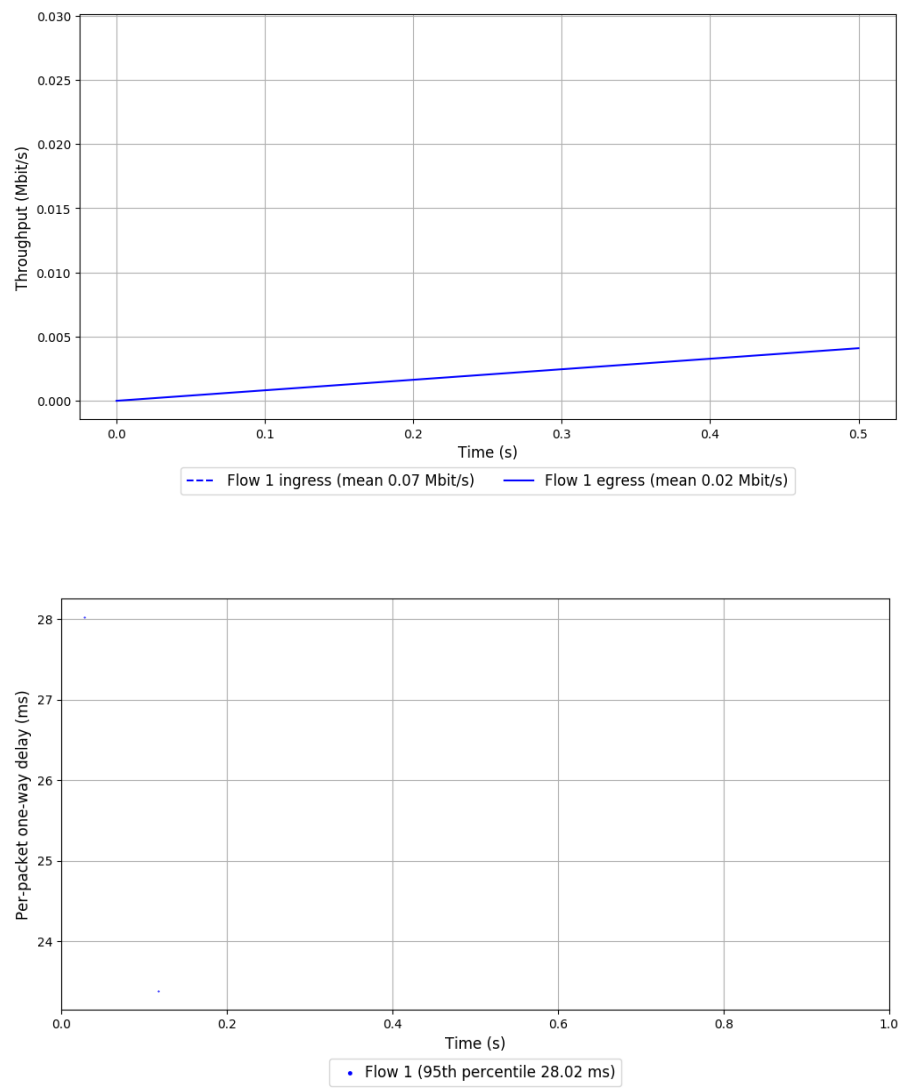Flow 1 (95th percentile -86.41 ms)

```
Run 5: Statistics of PCC-Expr

Start at: 2018-12-11 10:32:56
End at: 2018-12-11 10:33:26
Local clock offset: 3.181 ms
Remote clock offset: -5.025 ms
```

Run 5: Report of PCC-Expr — Data Link

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-12-11 09:11:38
End at: 2018-12-11 09:12:08
Local clock offset: 7.136 ms
Remote clock offset: 33.649 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 14.30 Mbit/s
95th percentile per-packet one-way delay: 124.749 ms
Loss rate: 0.97%
-- Flow 1:
Average throughput: 14.30 Mbit/s
95th percentile per-packet one-way delay: 124.749 ms
Loss rate: 0.97%
```
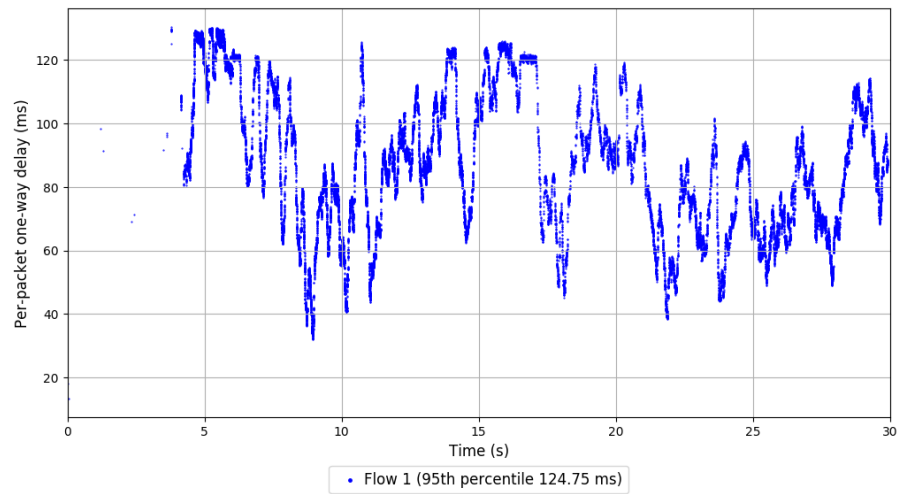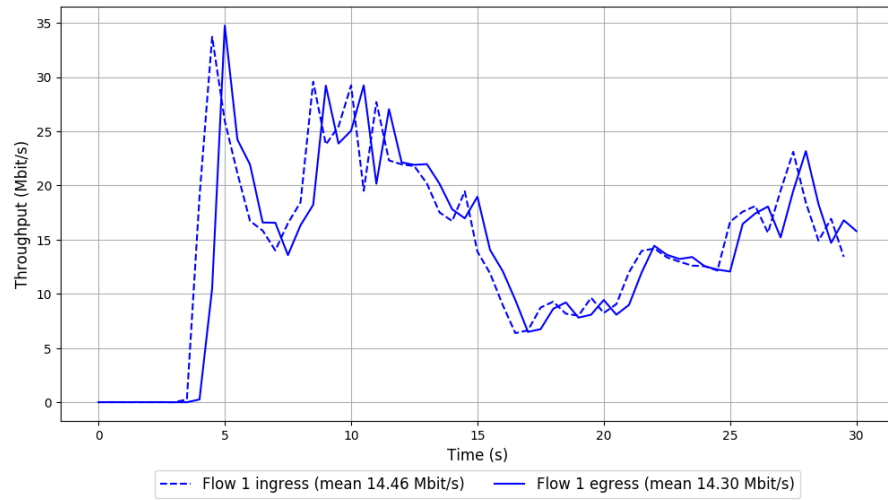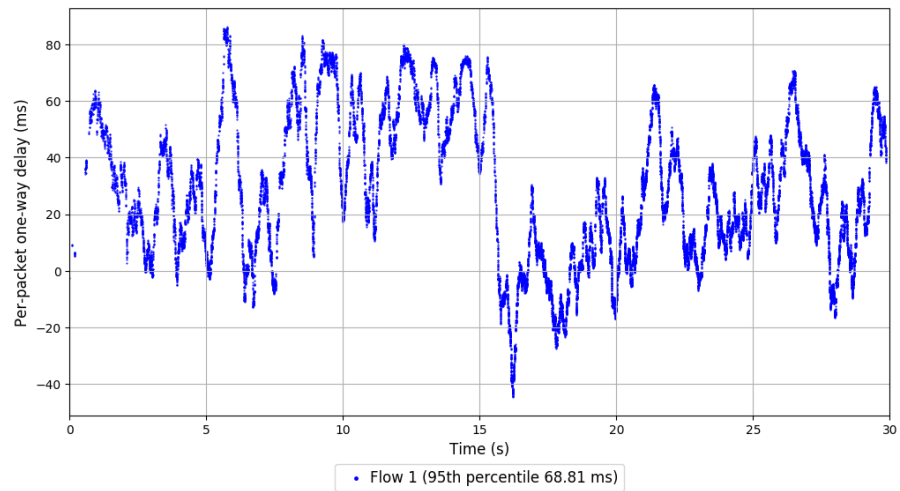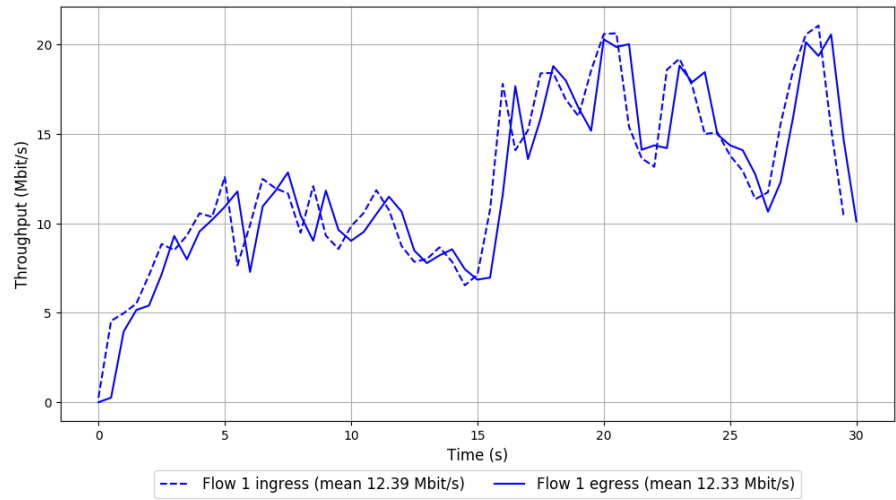
Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-12-11 09:33:08
End at: 2018-12-11 09:33:38
Local clock offset: 5.59 ms
Remote clock offset: -30.401 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.33 Mbit/s
95th percentile per-packet one-way delay: 68.814 ms
Loss rate: 0.52%
-- Flow 1:
Average throughput: 12.33 Mbit/s
95th percentile per-packet one-way delay: 68.814 ms
Loss rate: 0.52%
```

Run 2: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 12.39 Mbit/s)   Flow 1 egress (mean 12.33 Mbit/s)

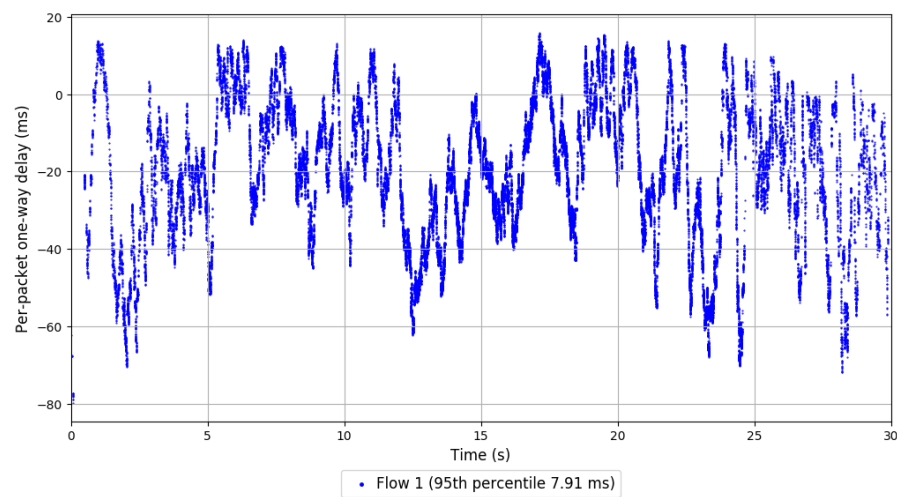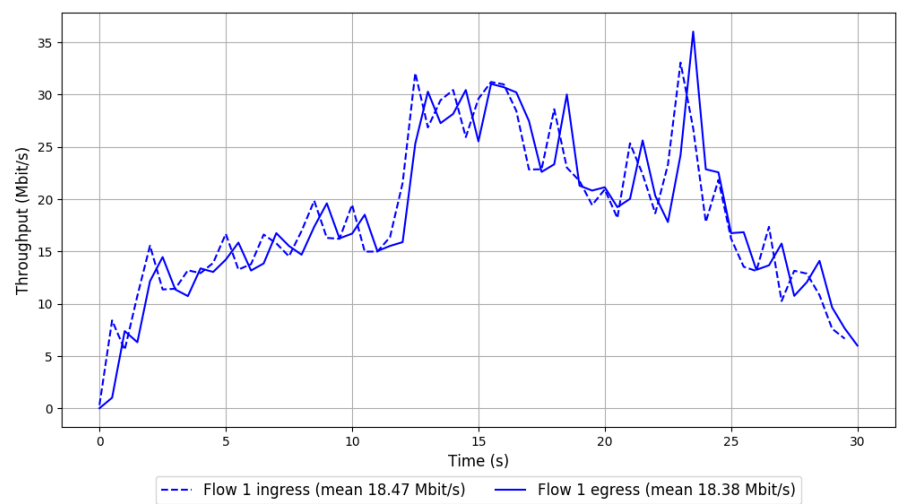

Flow 1 (95th percentile 68.81 ms)

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-12-11 09:54:31
End at: 2018-12-11 09:55:01
Local clock offset: 1.623 ms
Remote clock offset: -49.796 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 18.38 Mbit/s
95th percentile per-packet one-way delay: 7.909 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 18.38 Mbit/s
95th percentile per-packet one-way delay: 7.909 ms
Loss rate: 0.42%
```

Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 18.47 Mbit/s)   Flow 1 egress (mean 18.38 Mbit/s)

Flow 1 (95th percentile 7.91 ms)

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-12-11 10:16:06
End at: 2018-12-11 10:16:36
Local clock offset: -0.739 ms
Remote clock offset: -6.695 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 19.97 Mbit/s
95th percentile per-packet one-way delay: 64.918 ms
Loss rate: 0.40%
-- Flow 1:
Average throughput: 19.97 Mbit/s
95th percentile per-packet one-way delay: 64.918 ms
Loss rate: 0.40%
```
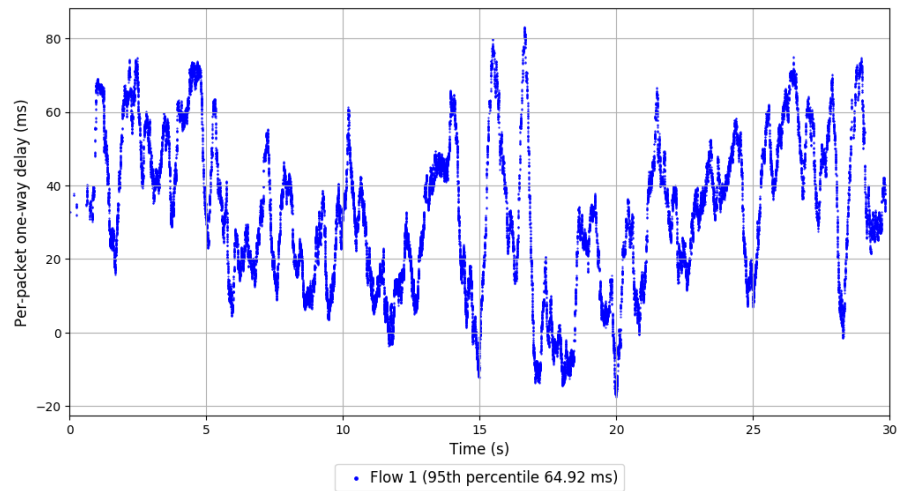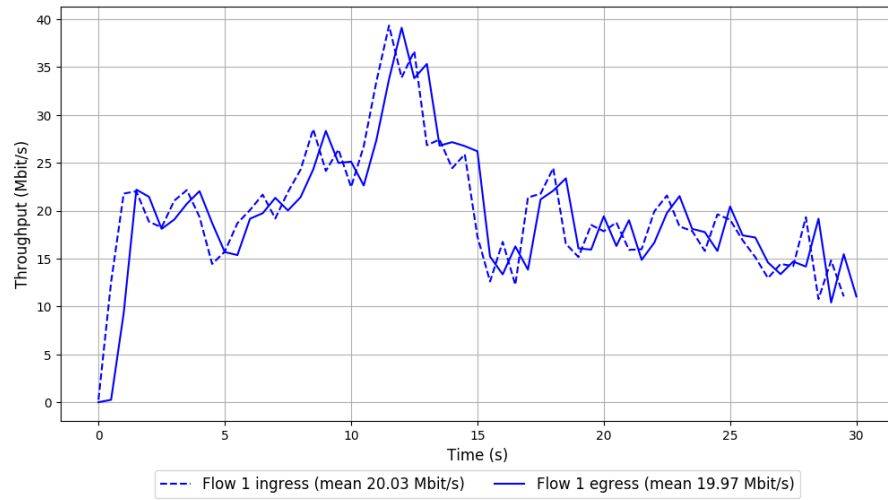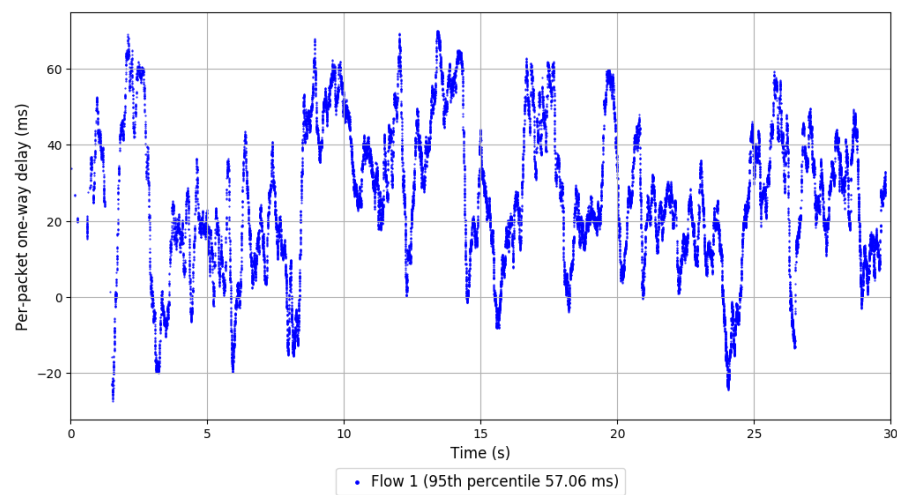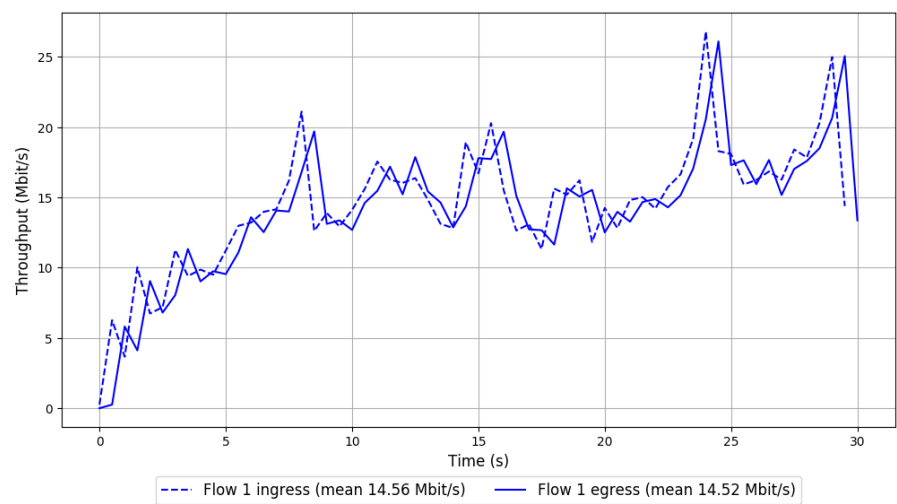
Run 4: Report of QUIC Cubic — Data Link

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-12-11 10:37:28
End at: 2018-12-11 10:37:58
Local clock offset: 3.311 ms
Remote clock offset: -13.264 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 14.52 Mbit/s
95th percentile per-packet one-way delay: 57.058 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 14.52 Mbit/s
95th percentile per-packet one-way delay: 57.058 ms
Loss rate: 0.38%
```

Run 5: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 14.56 Mbit/s)   Flow 1 egress (mean 14.52 Mbit/s)

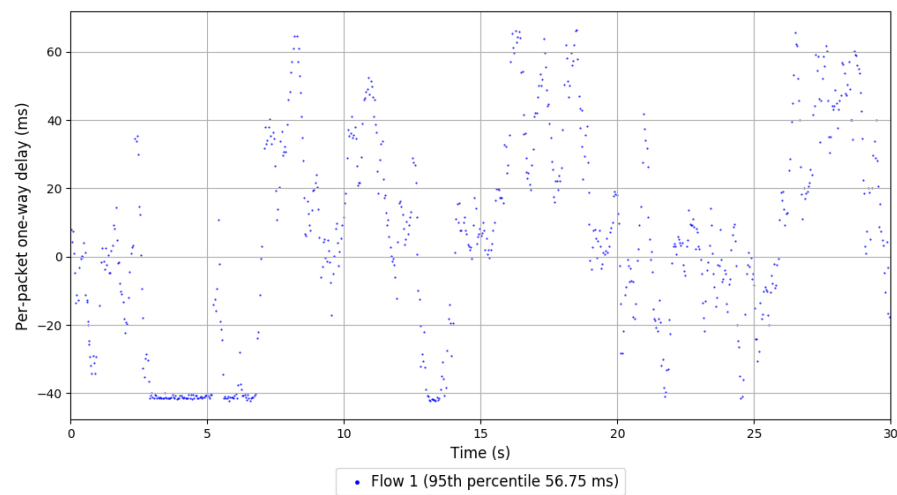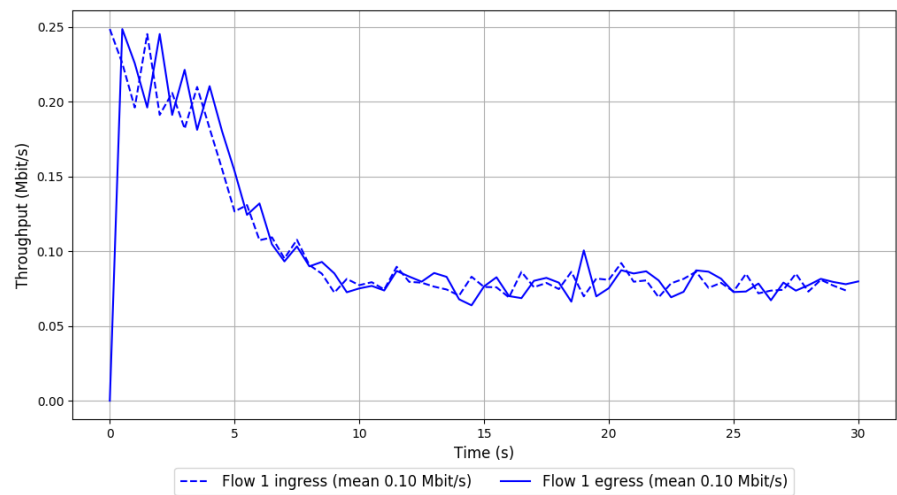

Flow 1 (95th percentile 57.06 ms)

```
Run 1: Statistics of SCReAM

Start at: 2018-12-11 09:08:15
End at: 2018-12-11 09:08:45
Local clock offset: 5.905 ms
Remote clock offset: -21.696 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 56.752 ms
Loss rate: 0.35%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 56.752 ms
Loss rate: 0.35%
```

Run 1: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.10 Mbit/s)   Flow 1 egress (mean 0.10 Mbit/s)

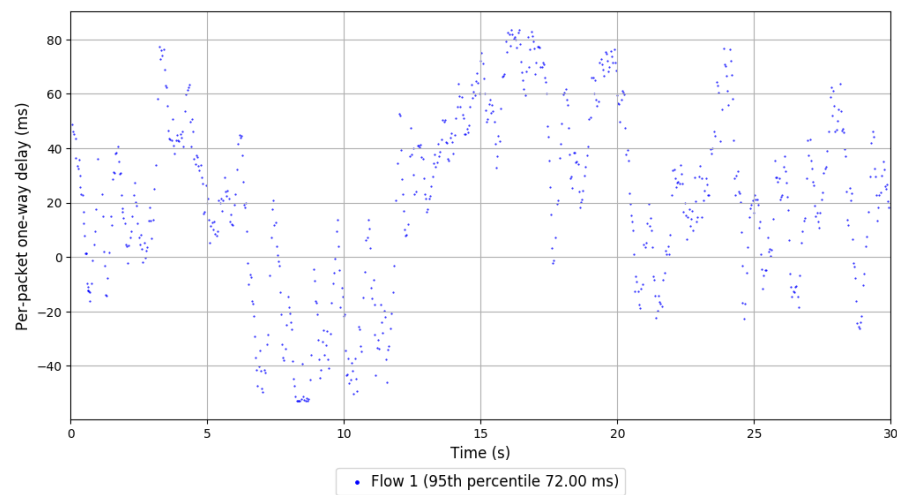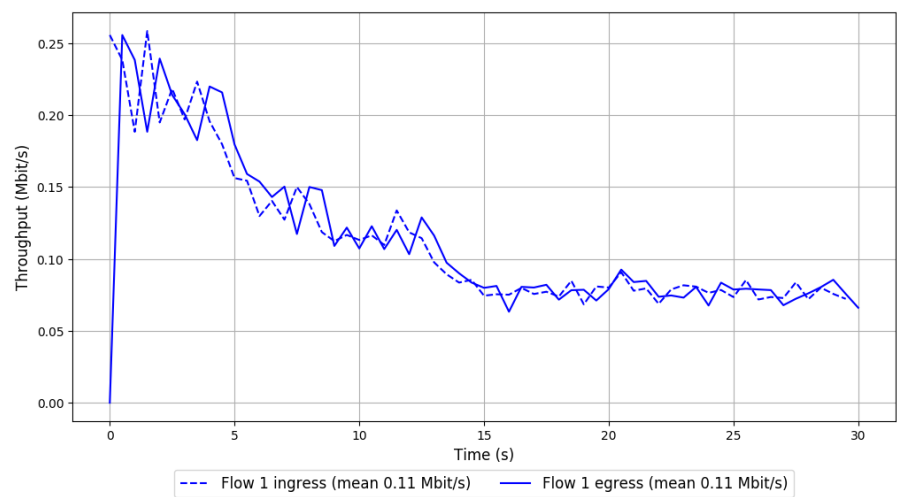Flow 1 (95th percentile 56.75 ms)

```
Run 2: Statistics of SCReAM

Start at: 2018-12-11 09:29:45
End at: 2018-12-11 09:30:15
Local clock offset: 5.99 ms
Remote clock offset: -28.903 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 71.999 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 71.999 ms
Loss rate: 0.19%
```

Run 2: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.11 Mbit/s) Flow 1 egress (mean 0.11 Mbit/s)
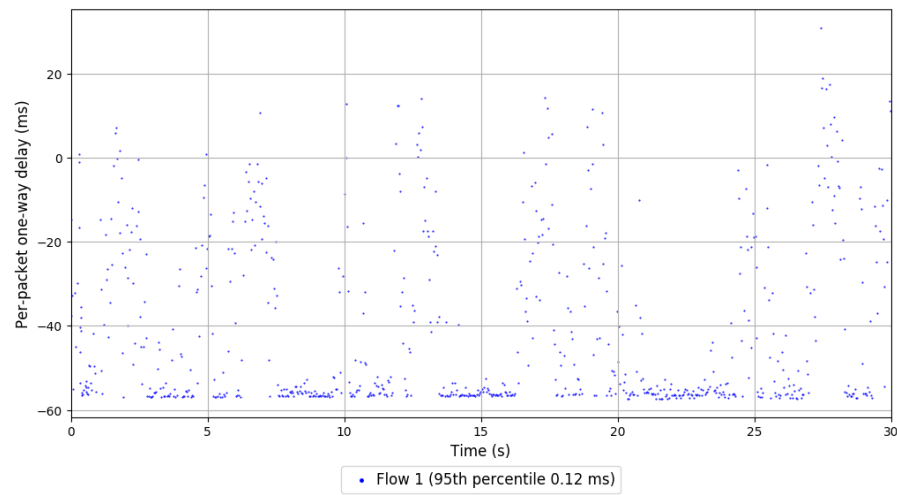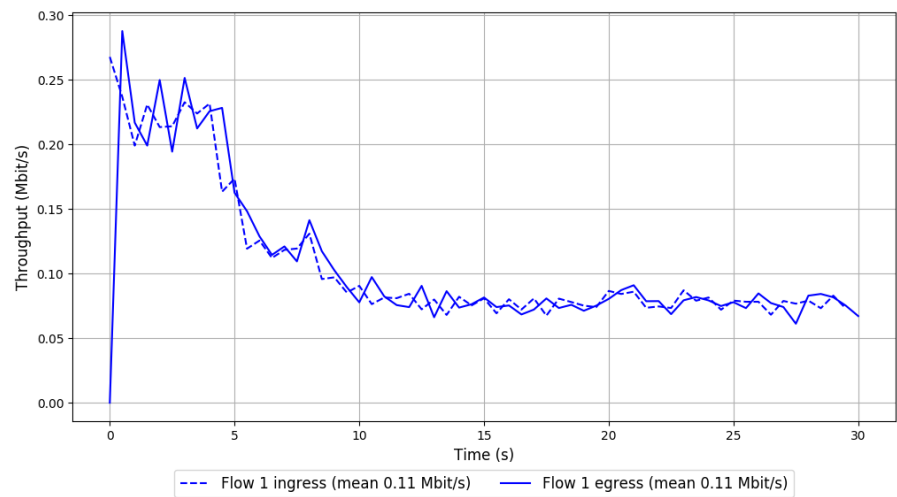

Flow 1 (95th percentile 72.00 ms)

```
Run 3: Statistics of SCReAM

Start at: 2018-12-11 09:51:04
End at: 2018-12-11 09:51:34
Local clock offset: -1.458 ms
Remote clock offset: -31.276 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 0.125 ms
Loss rate: 0.27%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 0.125 ms
Loss rate: 0.27%
```
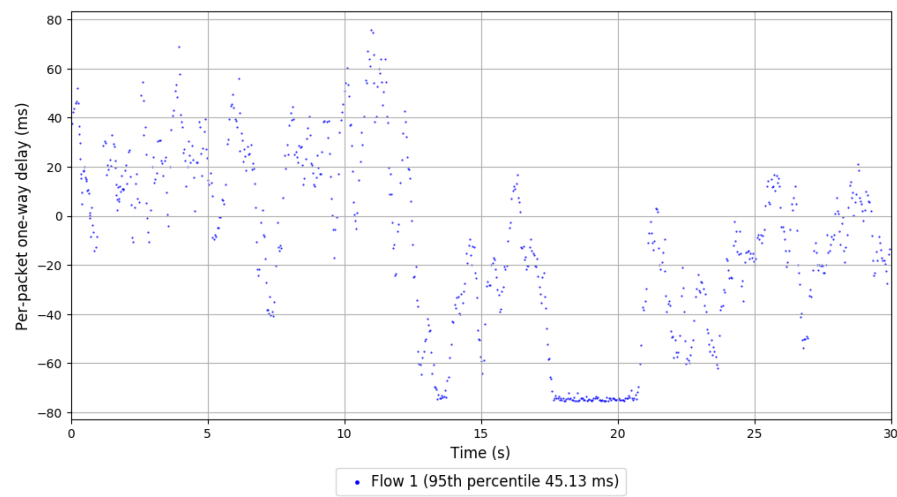
Run 3: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.11 Mbit/s) — — — Flow 1 egress (mean 0.11 Mbit/s)

• Flow 1 (95th percentile 0.12 ms)

```
Run 4: Statistics of SCReAM

Start at: 2018-12-11 10:12:41
End at: 2018-12-11 10:13:11
Local clock offset: -1.572 ms
Remote clock offset: -45.3 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 45.128 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 45.128 ms
Loss rate: 0.26%
```
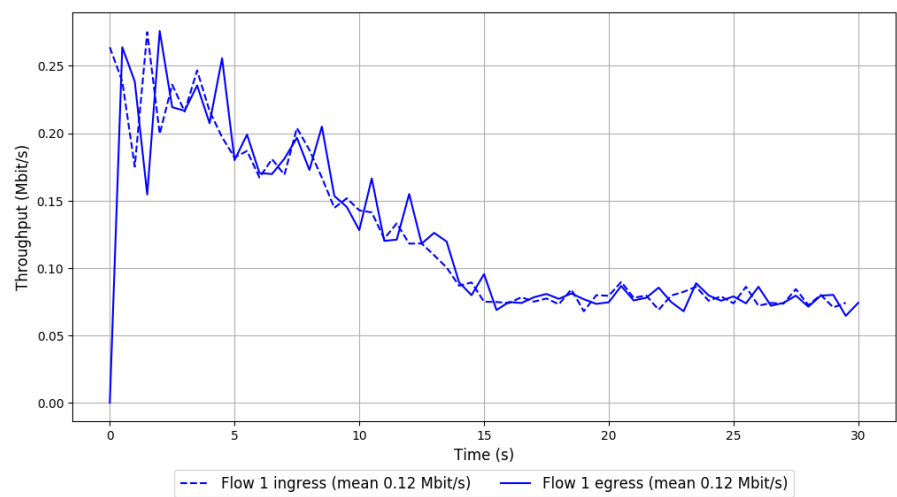
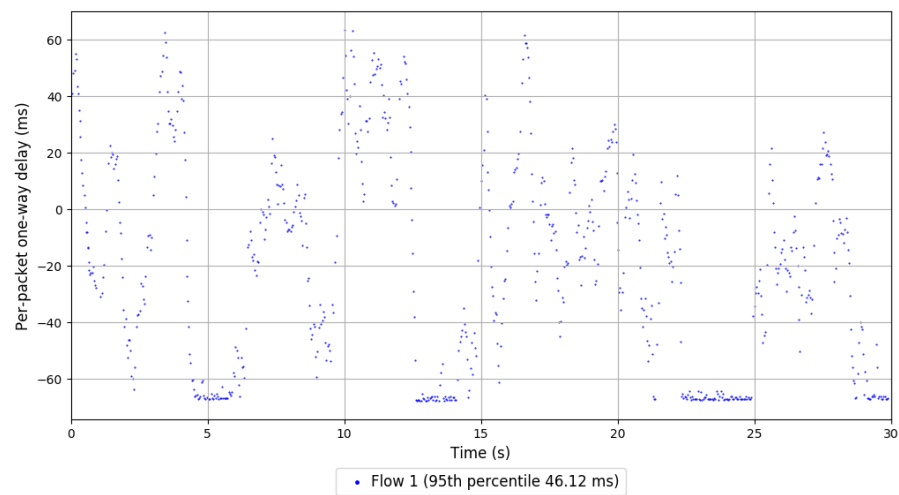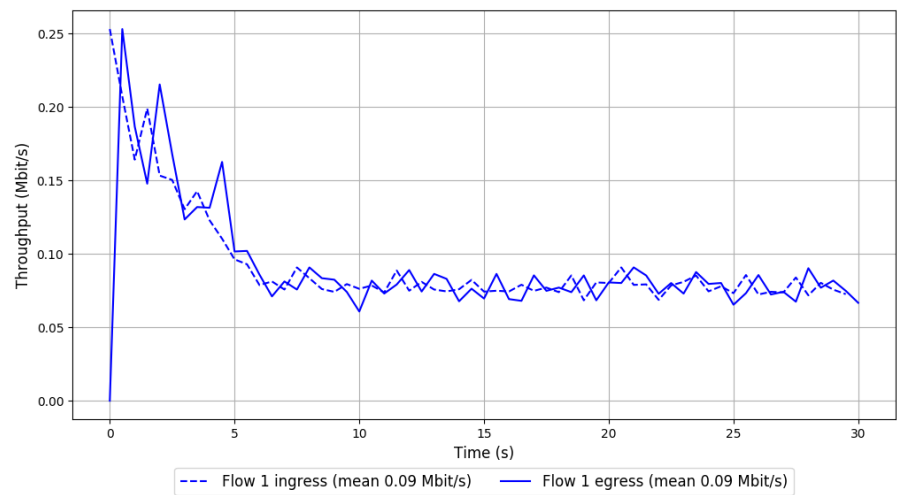Run 4: Report of SCReAM — Data Link

```
Run 5: Statistics of SCReAM

Start at: 2018-12-11 10:34:03
End at: 2018-12-11 10:34:33
Local clock offset: 3.415 ms
Remote clock offset: -29.791 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 46.125 ms
Loss rate: 0.50%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 46.125 ms
Loss rate: 0.50%
```

Run 5: Report of SCReAM — Data Link

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```
Run 1: Statistics of Sprout

Start at: 2018-12-11 09:04:55
End at: 2018-12-11 09:05:25
Local clock offset: 2.754 ms
Remote clock offset: -0.841 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.82 Mbit/s
95th percentile per-packet one-way delay: 66.212 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 10.82 Mbit/s
95th percentile per-packet one-way delay: 66.212 ms
Loss rate: 0.70%
```
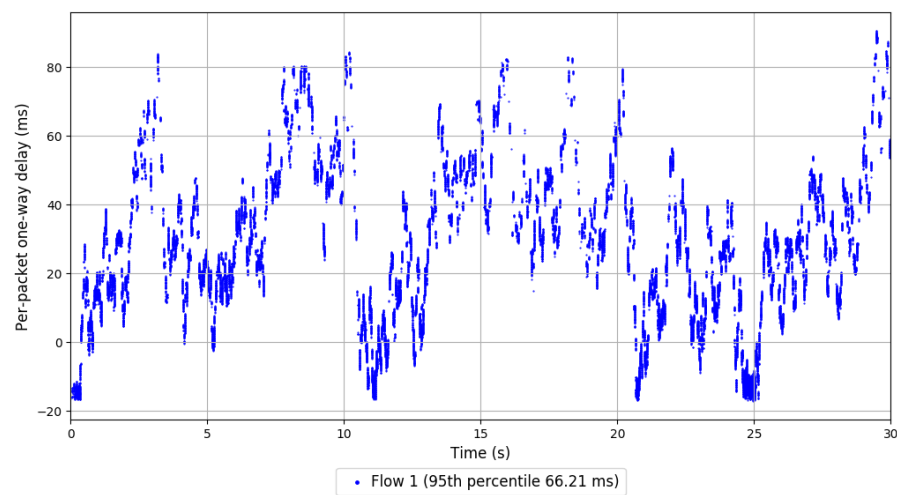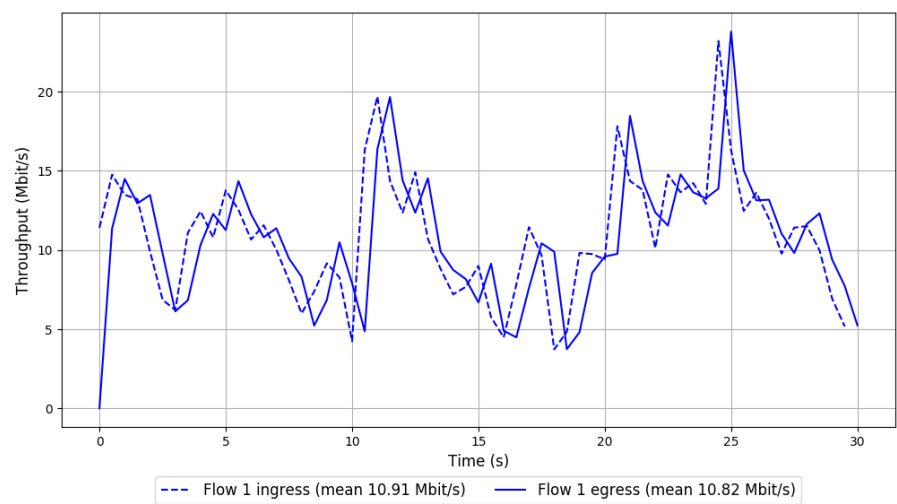
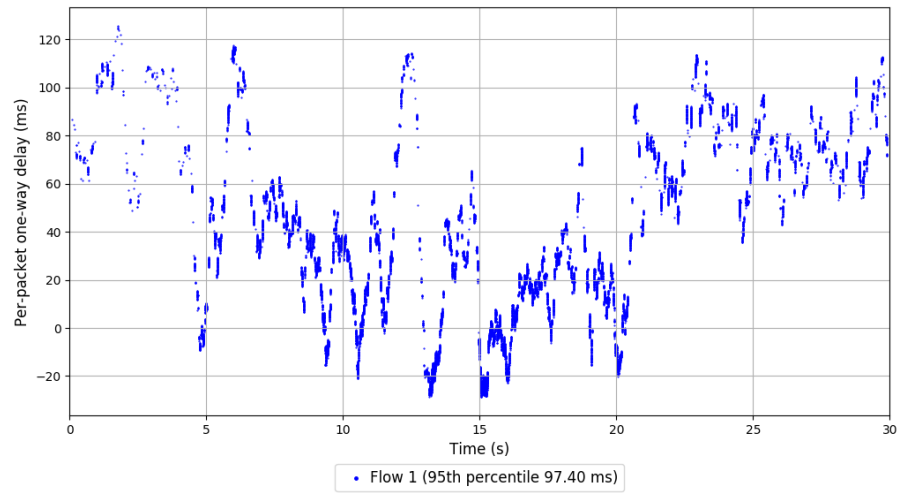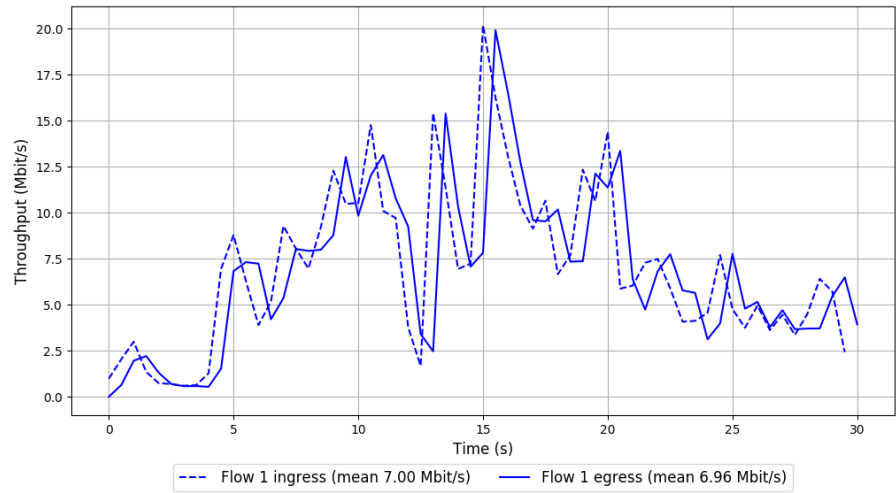Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-12-11 09:26:22
End at: 2018-12-11 09:26:52
Local clock offset: 6.539 ms
Remote clock offset: -4.424 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.96 Mbit/s
95th percentile per-packet one-way delay: 97.401 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 6.96 Mbit/s
95th percentile per-packet one-way delay: 97.401 ms
Loss rate: 0.69%
```

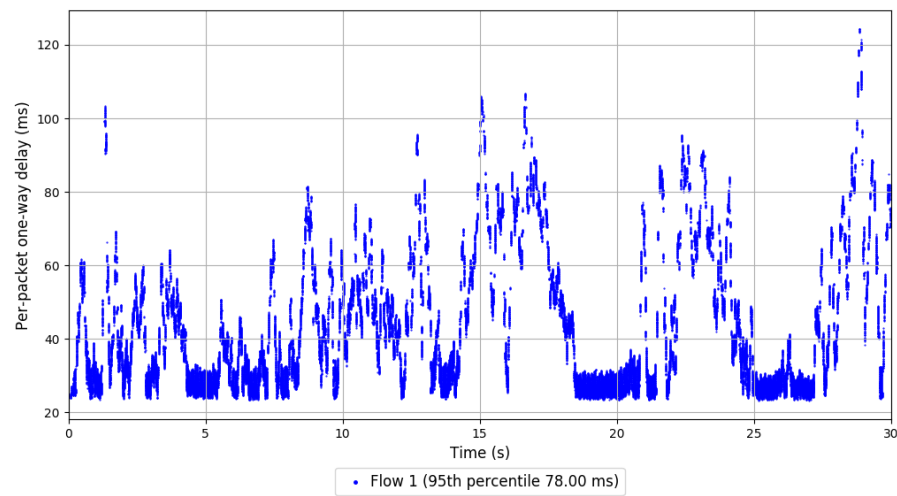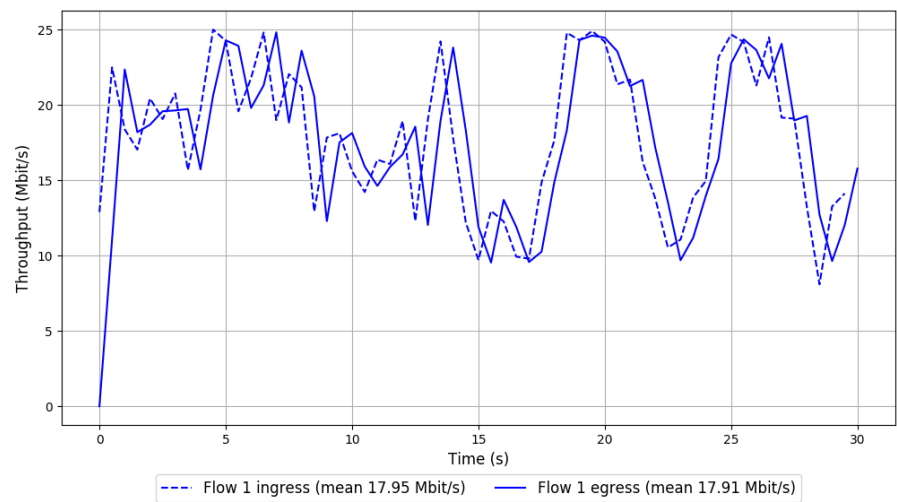## Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-12-11 09:47:43
End at: 2018-12-11 09:48:13
Local clock offset: 1.23 ms
Remote clock offset: 50.482 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 17.91 Mbit/s
95th percentile per-packet one-way delay: 77.999 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 17.91 Mbit/s
95th percentile per-packet one-way delay: 77.999 ms
Loss rate: 0.08%
```

Run 3: Report of Sprout — Data Link

Flow 1 ingress (mean 17.95 Mbit/s) --- Flow 1 egress (mean 17.91 Mbit/s)
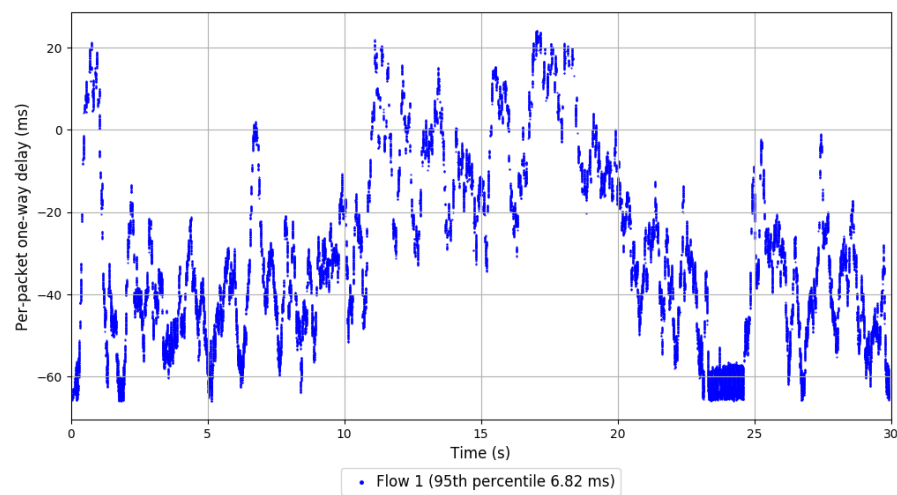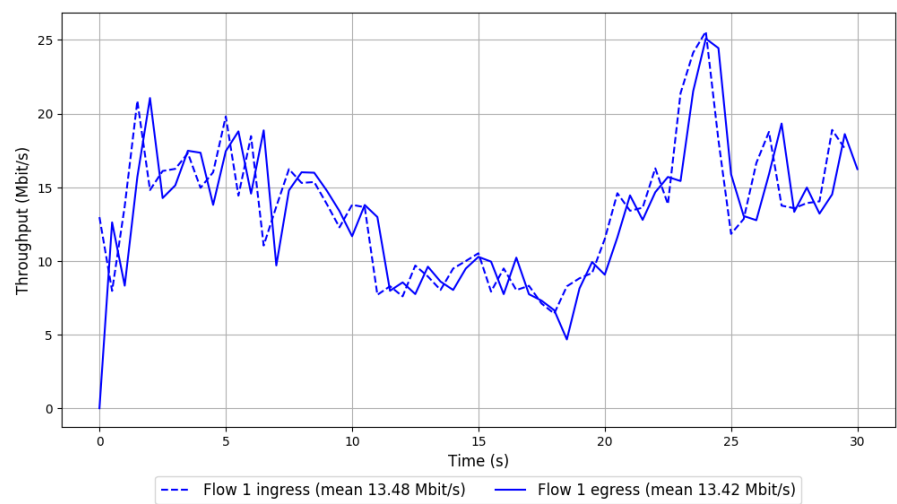

Flow 1 (95th percentile 78.00 ms)

```
Run 4: Statistics of Sprout

Start at: 2018-12-11 10:09:18
End at: 2018-12-11 10:09:48
Local clock offset: -0.038 ms
Remote clock offset: -33.866 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.42 Mbit/s
95th percentile per-packet one-way delay: 6.817 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 13.42 Mbit/s
95th percentile per-packet one-way delay: 6.817 ms
Loss rate: 0.43%
```
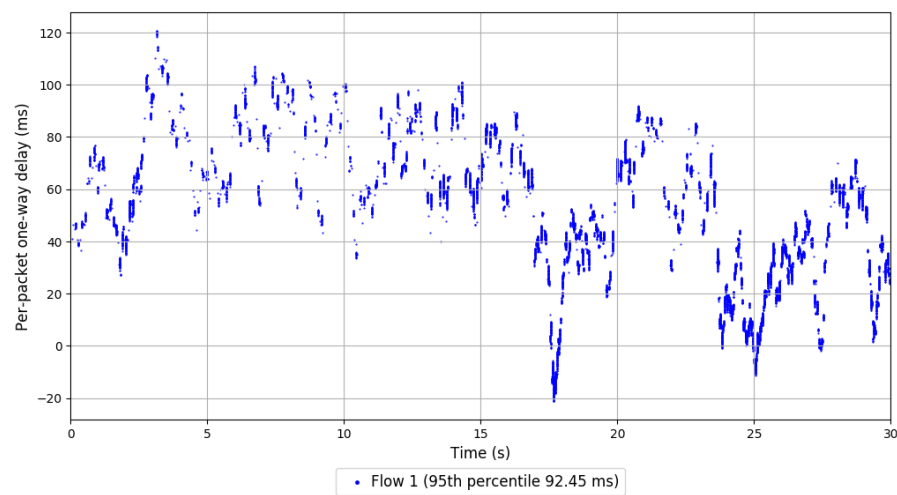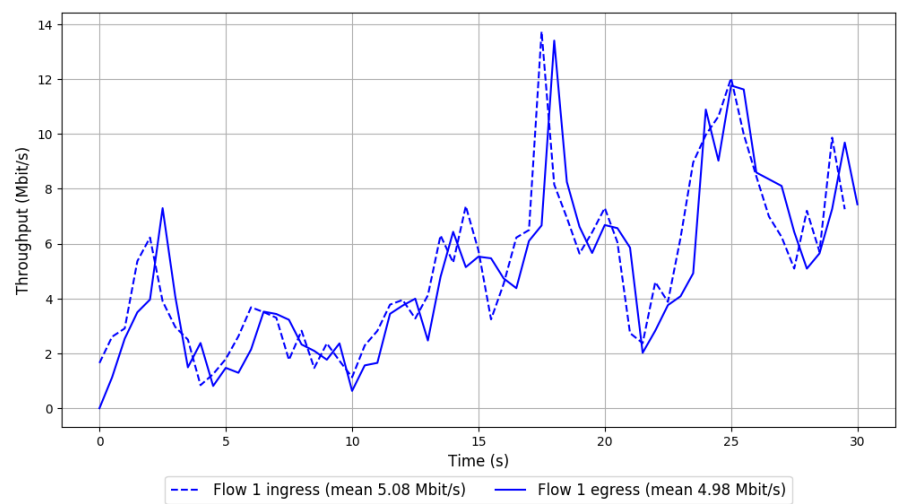
Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-12-11 10:30:43
End at: 2018-12-11 10:31:13
Local clock offset: -6.736 ms
Remote clock offset: -10.519 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.98 Mbit/s
95th percentile per-packet one-way delay: 92.453 ms
Loss rate: 2.03%
-- Flow 1:
Average throughput: 4.98 Mbit/s
95th percentile per-packet one-way delay: 92.453 ms
Loss rate: 2.03%
```

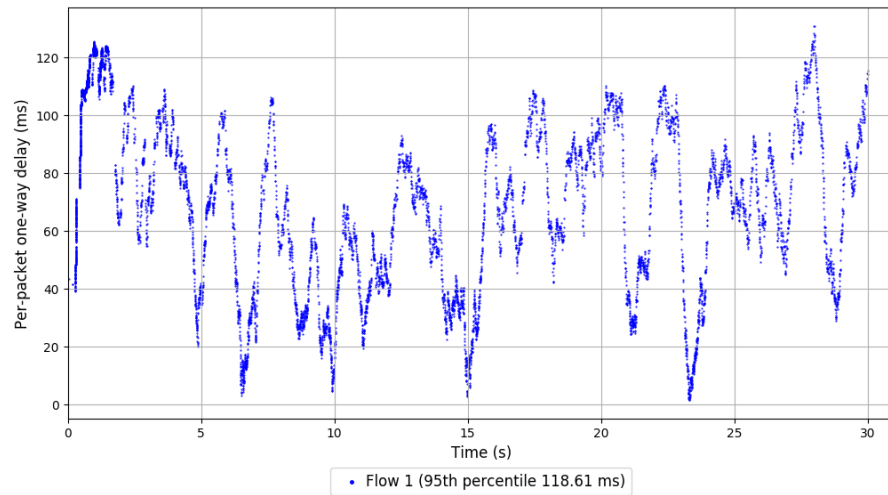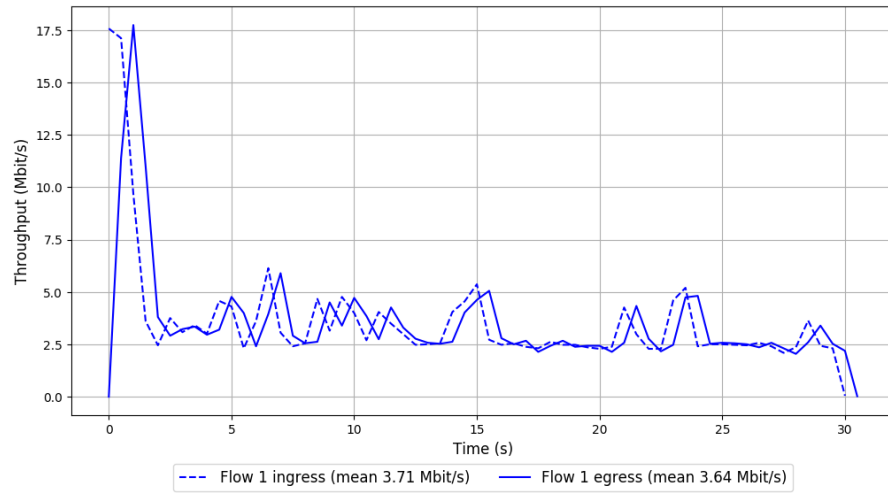Run 5: Report of Sprout — Data Link

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

Start at: 2018-12-11 09:15:00
End at: 2018-12-11 09:15:30
Local clock offset: 5.567 ms
Remote clock offset: -31.294 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.64 Mbit/s
95th percentile per-packet one-way delay: 118.612 ms
Loss rate: 2.03%
-- Flow 1:
Average throughput: 3.64 Mbit/s
95th percentile per-packet one-way delay: 118.612 ms
Loss rate: 2.03%
```

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

Flow 1 ingress (mean 3.71 Mbit/s)   Flow 1 egress (mean 3.64 Mbit/s)

Flow 1 (95th percentile 118.61 ms)

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

Start at: 2018-12-11 09:36:28
End at: 2018-12-11 09:36:58
Local clock offset: 4.158 ms
Remote clock offset: -6.786 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.89 Mbit/s
95th percentile per-packet one-way delay: 75.833 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 3.89 Mbit/s
95th percentile per-packet one-way delay: 75.833 ms
Loss rate: 0.47%
```
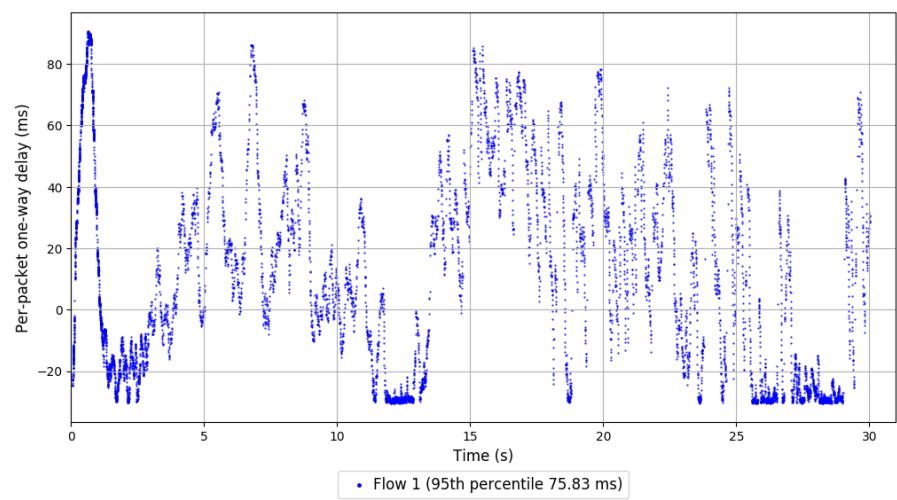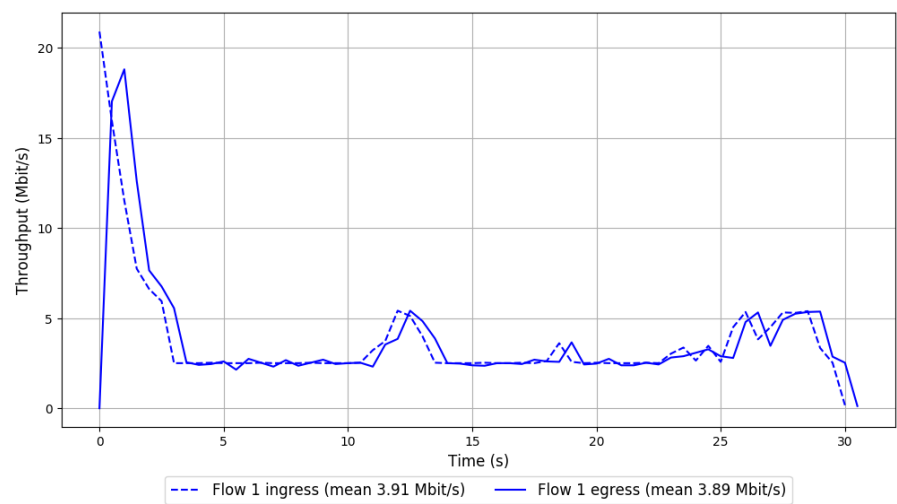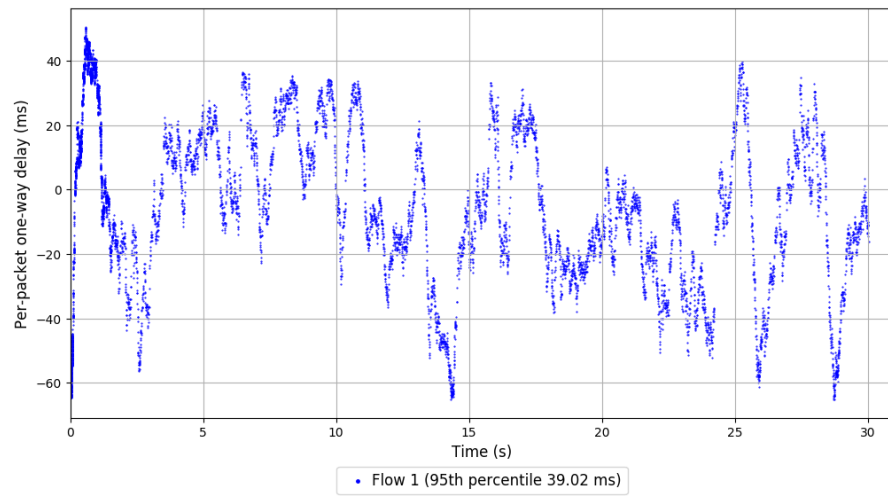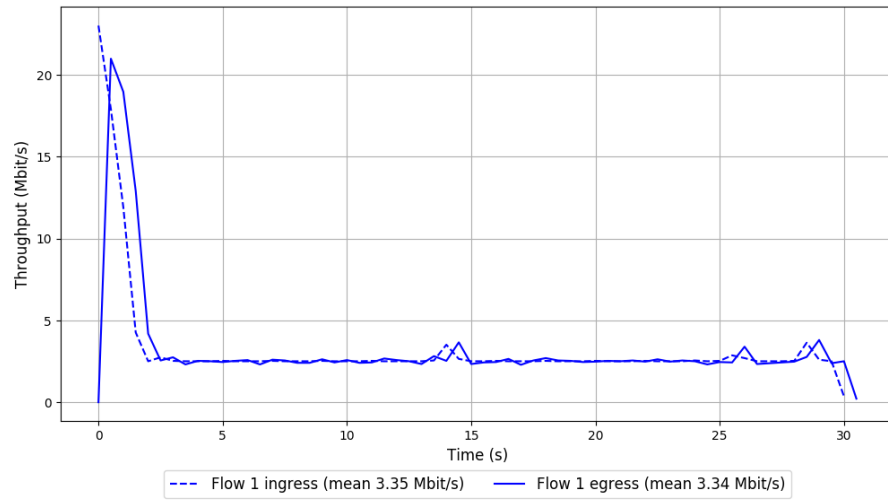
Run 2: Report of TaoVA-100x — Data Link

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

Start at: 2018-12-11 09:57:55
End at: 2018-12-11 09:58:25
Local clock offset: 1.558 ms
Remote clock offset: -34.366 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.34 Mbit/s
95th percentile per-packet one-way delay: 39.020 ms
Loss rate: 0.29%
-- Flow 1:
Average throughput: 3.34 Mbit/s
95th percentile per-packet one-way delay: 39.020 ms
Loss rate: 0.29%
```
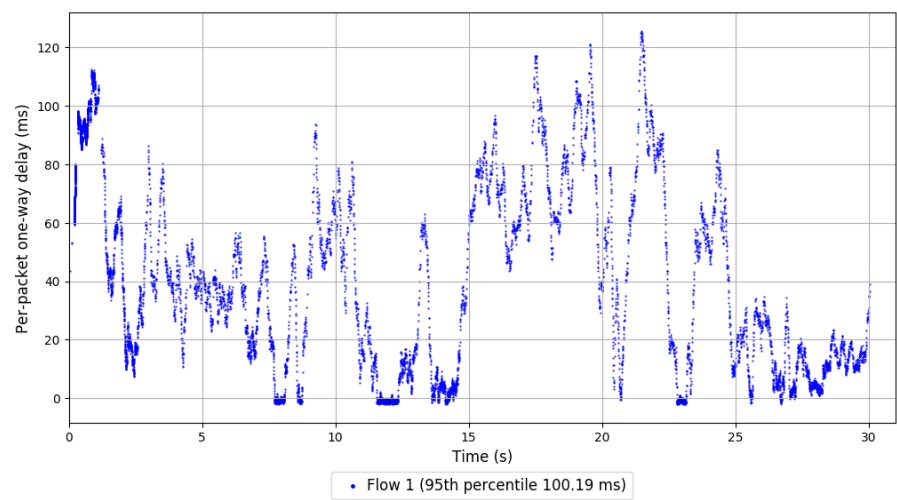
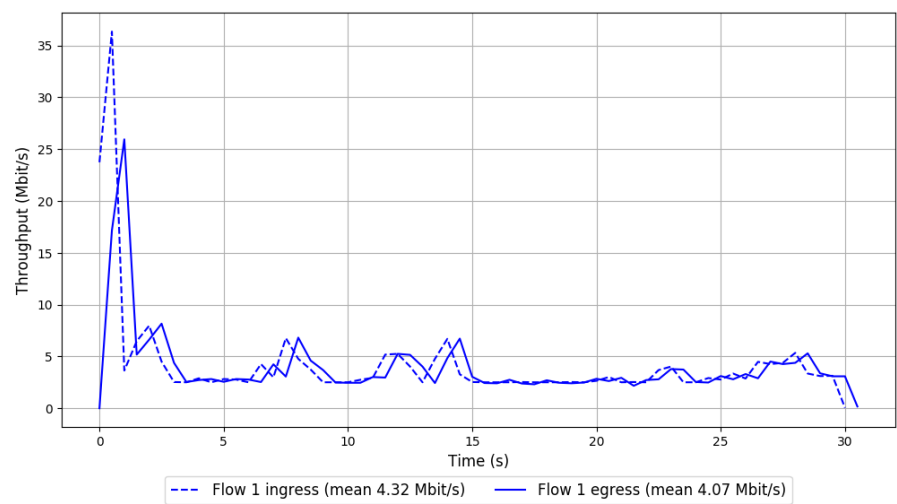Run 3: Report of TaoVA-100x — Data Link

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

Start at: 2018-12-11 10:19:26
End at: 2018-12-11 10:19:56
Local clock offset: -7.561 ms
Remote clock offset: 22.654 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.07 Mbit/s
95th percentile per-packet one-way delay: 100.192 ms
Loss rate: 5.81%
-- Flow 1:
Average throughput: 4.07 Mbit/s
95th percentile per-packet one-way delay: 100.192 ms
Loss rate: 5.81%
```

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

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

Start at: 2018-12-11 10:40:49
End at: 2018-12-11 10:41:19
Local clock offset: 1.386 ms
Remote clock offset: 13.044 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.03 Mbit/s
95th percentile per-packet one-way delay: 72.907 ms
Loss rate: 31.35%
-- Flow 1:
Average throughput: 5.03 Mbit/s
95th percentile per-packet one-way delay: 72.907 ms
Loss rate: 31.35%
```
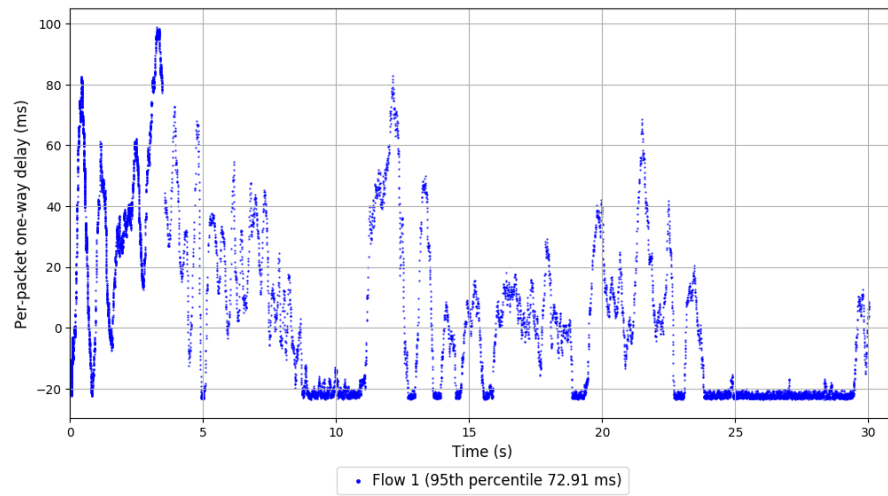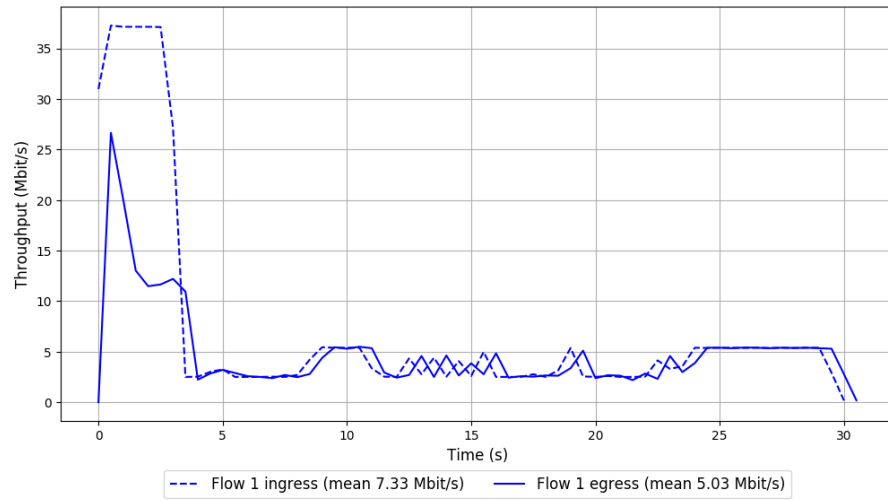
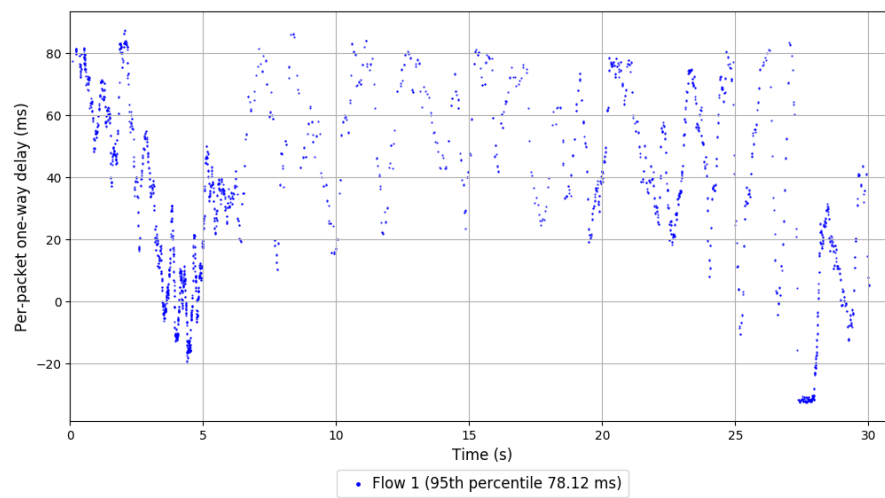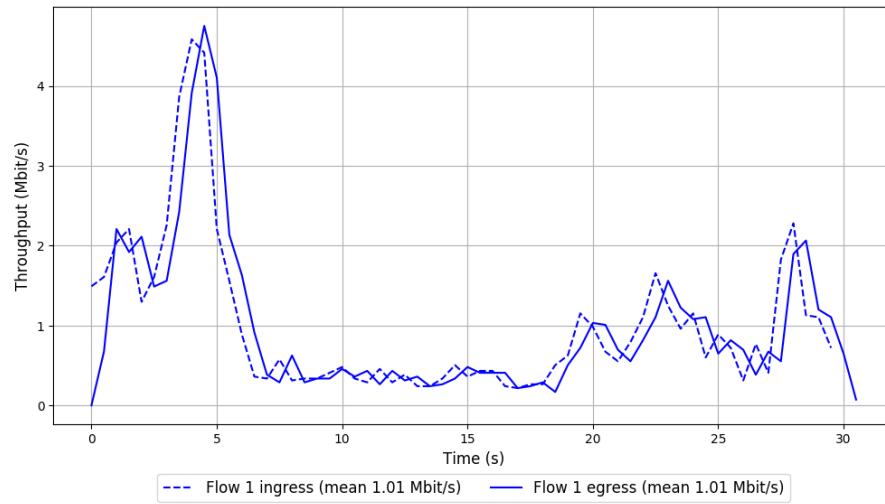Run 5: Report of TaoVA-100x — Data Link

```
Run 1: Statistics of TCP Vegas

Start at: 2018-12-11 09:12:46
End at: 2018-12-11 09:13:16
Local clock offset: 3.946 ms
Remote clock offset: -13.281 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 78.118 ms
Loss rate: 0.48%
-- Flow 1:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 78.118 ms
Loss rate: 0.48%
```

Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-12-11 09:34:16
End at: 2018-12-11 09:34:46
Local clock offset: 5.632 ms
Remote clock offset: 6.093 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.43 Mbit/s
95th percentile per-packet one-way delay: 73.696 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 4.43 Mbit/s
95th percentile per-packet one-way delay: 73.696 ms
Loss rate: 0.14%
```
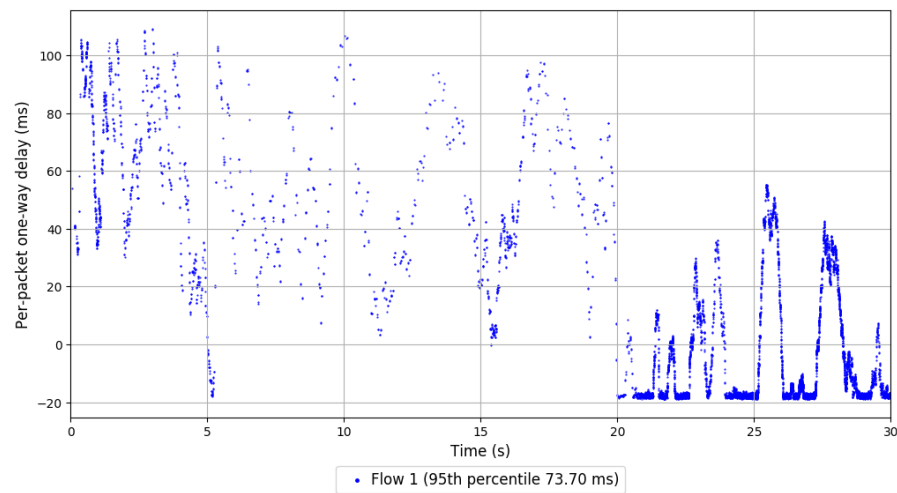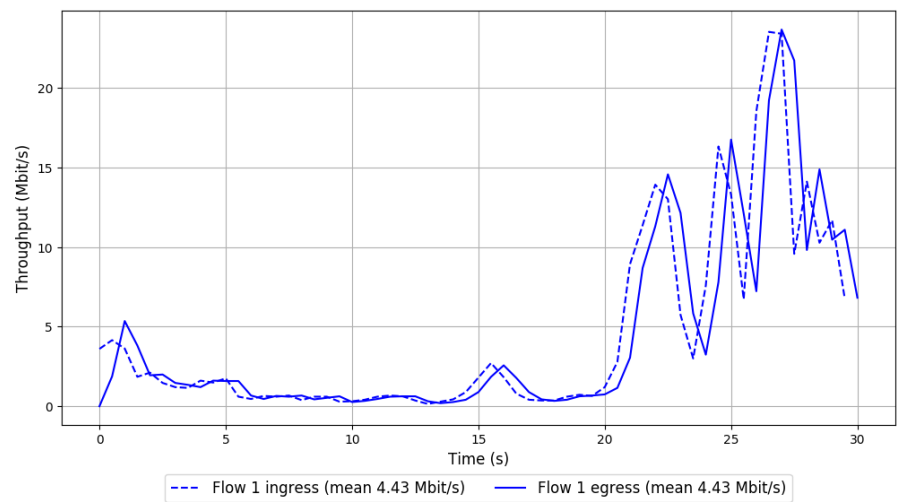
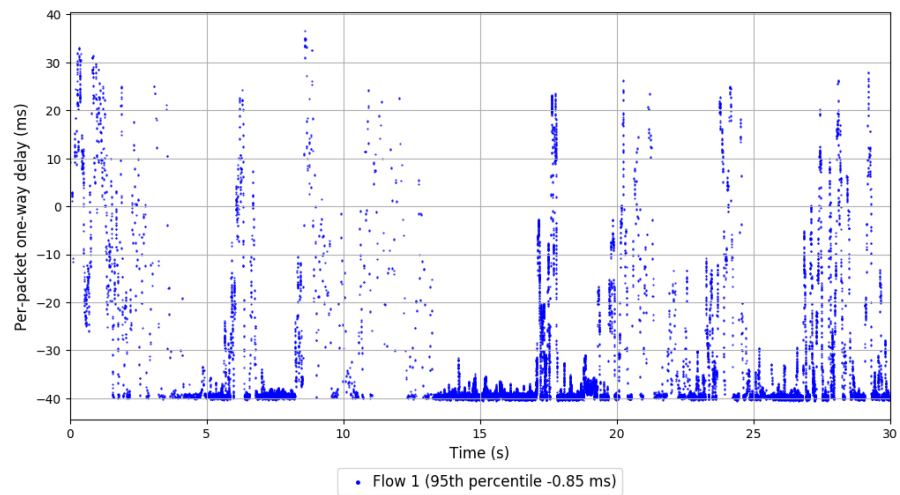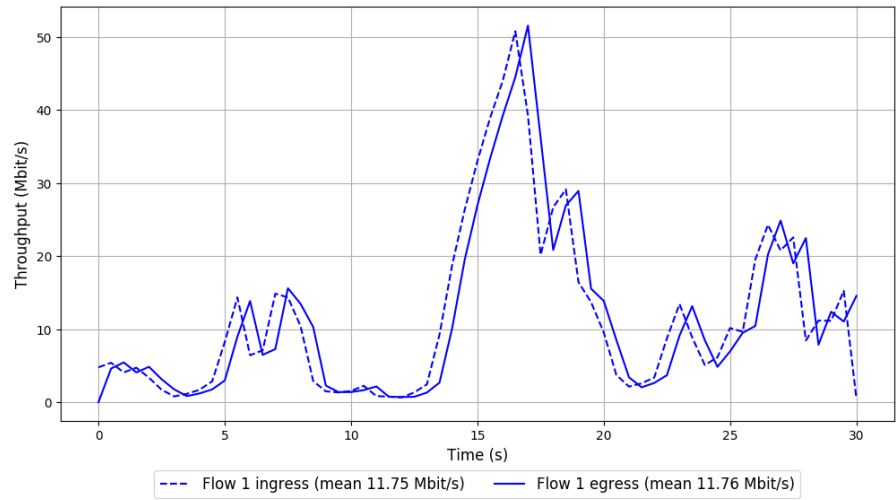Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-12-11 09:55:39
End at: 2018-12-11 09:56:09
Local clock offset: 1.382 ms
Remote clock offset: -10.084 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.76 Mbit/s
95th percentile per-packet one-way delay: -0.848 ms
Loss rate: 0.15%
-- Flow 1:
Average throughput: 11.76 Mbit/s
95th percentile per-packet one-way delay: -0.848 ms
Loss rate: 0.15%
```

Run 3: Report of TCP Vegas — Data Link

```
Run 4: Statistics of TCP Vegas

Start at: 2018-12-11 10:17:13
End at: 2018-12-11 10:17:43
Local clock offset: 0.492 ms
Remote clock offset: 0.034 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.93 Mbit/s
95th percentile per-packet one-way delay: 66.171 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 3.93 Mbit/s
95th percentile per-packet one-way delay: 66.171 ms
Loss rate: 0.09%
```
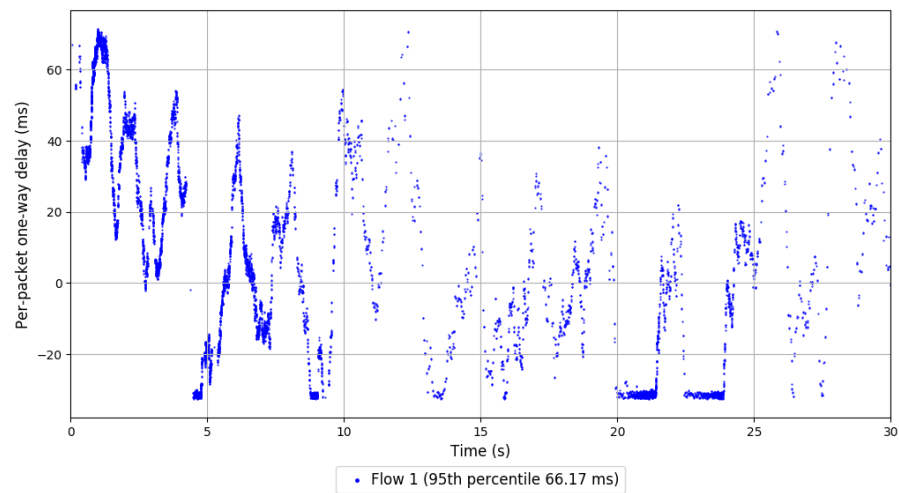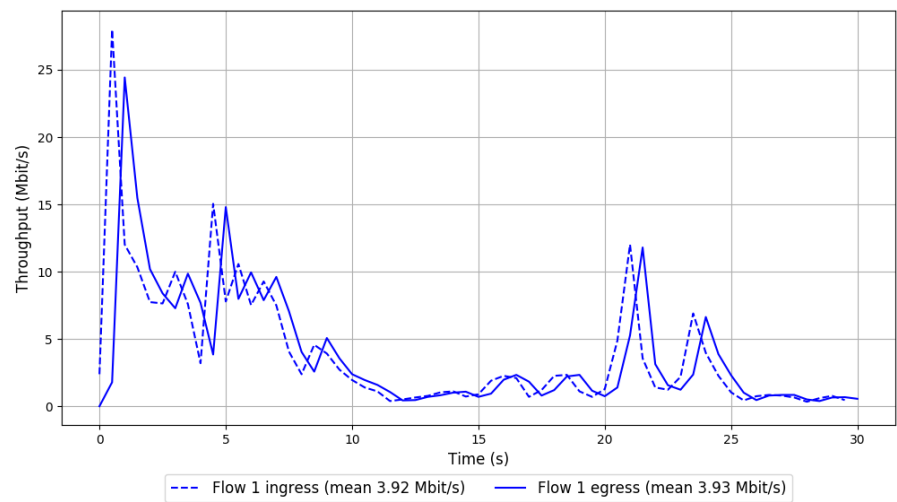
Run 4: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 3.92 Mbit/s)   Flow 1 egress (mean 3.93 Mbit/s)

Flow 1 (95th percentile 66.17 ms)

```
Run 5: Statistics of TCP Vegas

Start at: 2018-12-11 10:38:36
End at: 2018-12-11 10:39:06
Local clock offset: 2.695 ms
Remote clock offset: 6.915 ms


# Below is generated by plot.py at 2018-12-11 10:49:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.38 Mbit/s
95th percentile per-packet one-way delay: 92.630 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 2.38 Mbit/s
95th percentile per-packet one-way delay: 92.630 ms
Loss rate: 0.07%
```
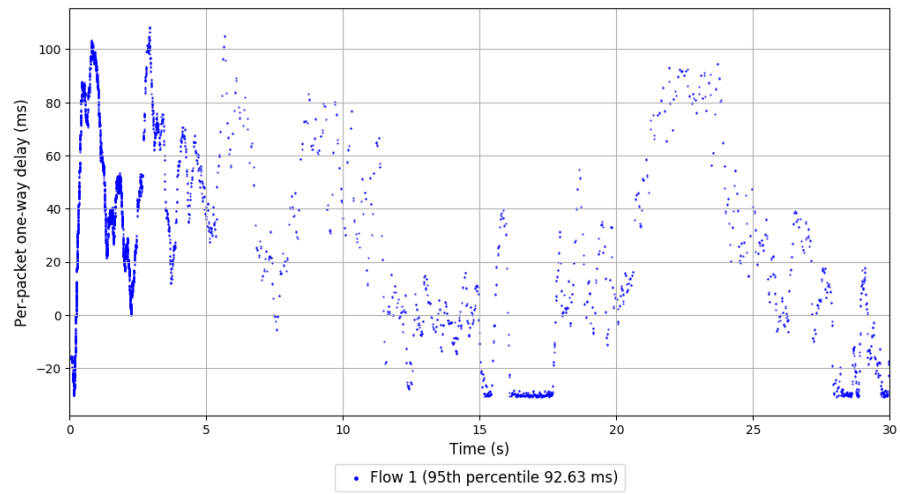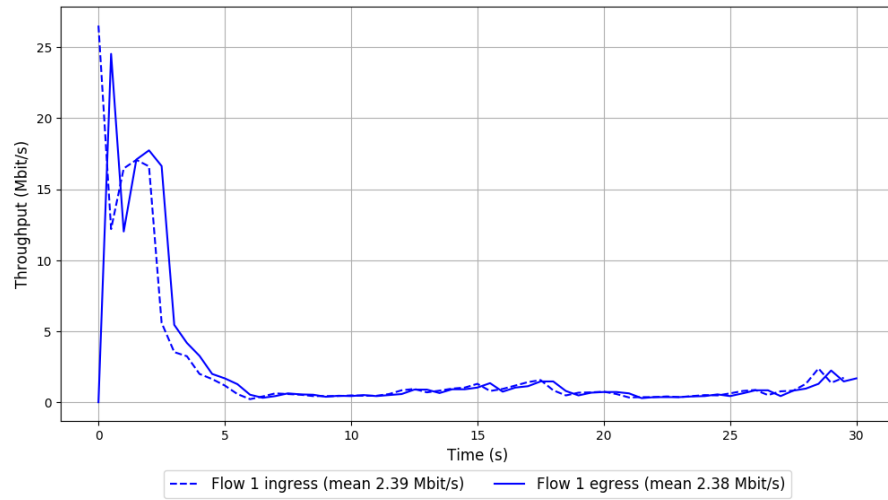
Run 5: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2018-12-11 09:02:34
End at: 2018-12-11 09:03:04
Local clock offset: 4.043 ms
Remote clock offset: 10.31 ms


# Below is generated by plot.py at 2018-12-11 10:50:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 78.92 Mbit/s
95th percentile per-packet one-way delay: 73.484 ms
Loss rate: 7.31%
-- Flow 1:
Average throughput: 78.92 Mbit/s
95th percentile per-packet one-way delay: 73.484 ms
Loss rate: 7.31%
```
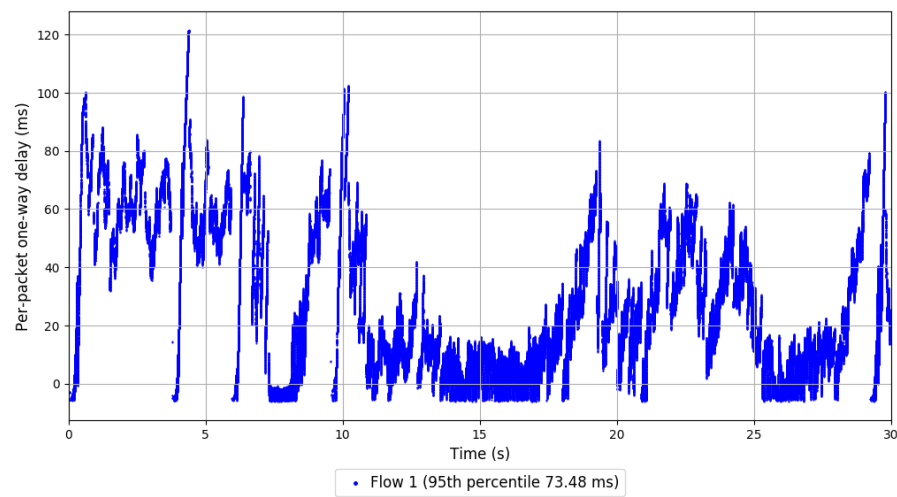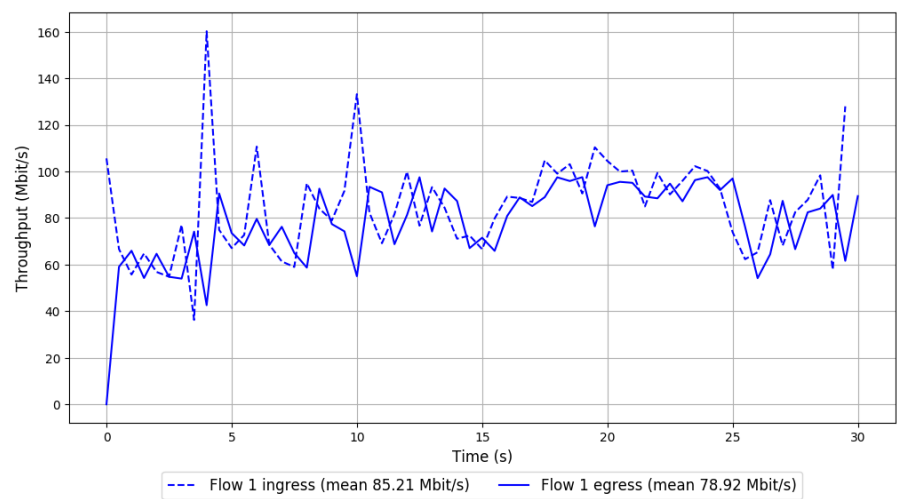
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-12-11 09:24:02
End at: 2018-12-11 09:24:32
Local clock offset: 6.885 ms
Remote clock offset: 5.942 ms


# Below is generated by plot.py at 2018-12-11 10:50:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 80.20 Mbit/s
95th percentile per-packet one-way delay: 66.060 ms
Loss rate: 7.93%
-- Flow 1:
Average throughput: 80.20 Mbit/s
95th percentile per-packet one-way delay: 66.060 ms
Loss rate: 7.93%
```
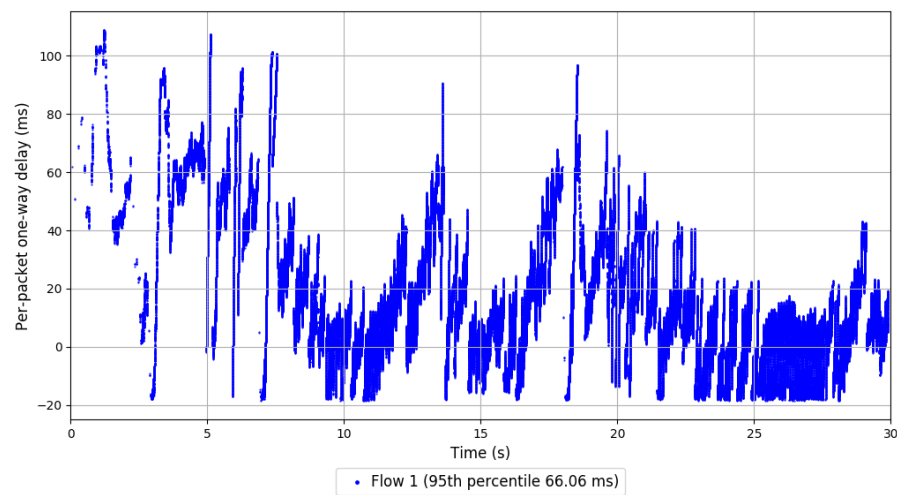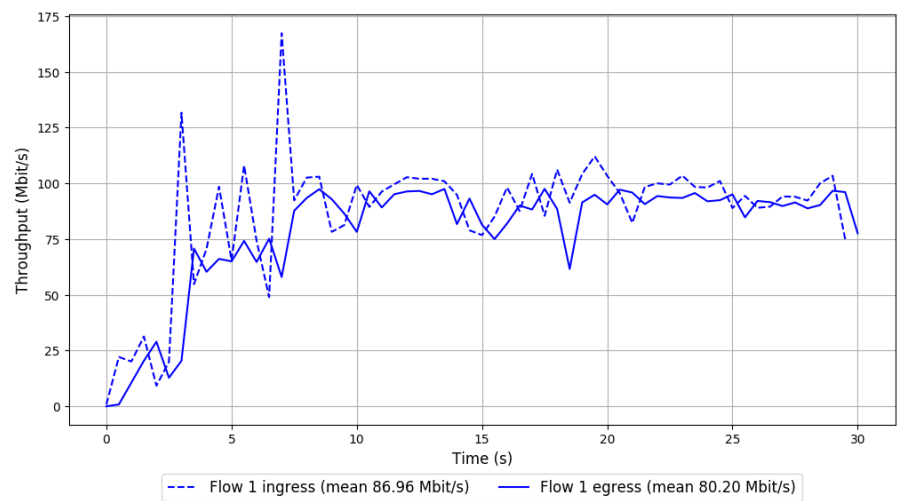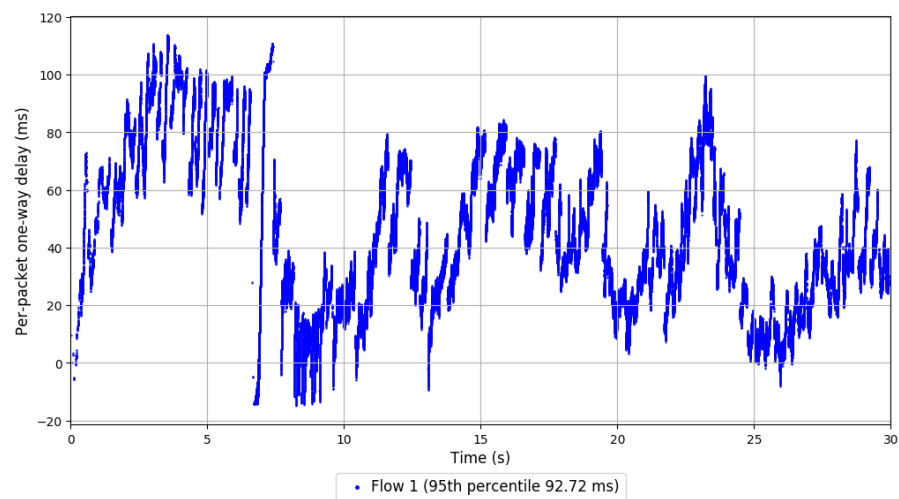
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-12-11 09:45:25
End at: 2018-12-11 09:45:55
Local clock offset: 3.306 ms
Remote clock offset: 13.163 ms


# Below is generated by plot.py at 2018-12-11 10:50:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 63.50 Mbit/s
95th percentile per-packet one-way delay: 92.720 ms
Loss rate: 3.85%
-- Flow 1:
Average throughput: 63.50 Mbit/s
95th percentile per-packet one-way delay: 92.720 ms
Loss rate: 3.85%
```
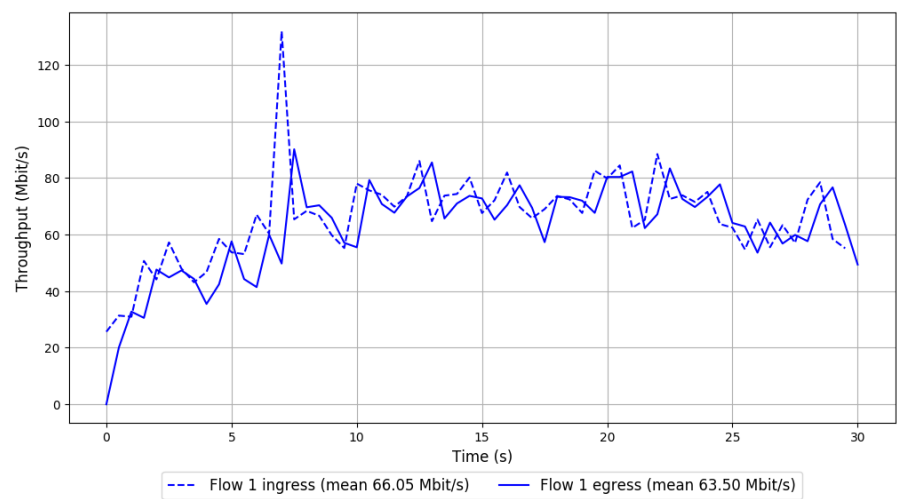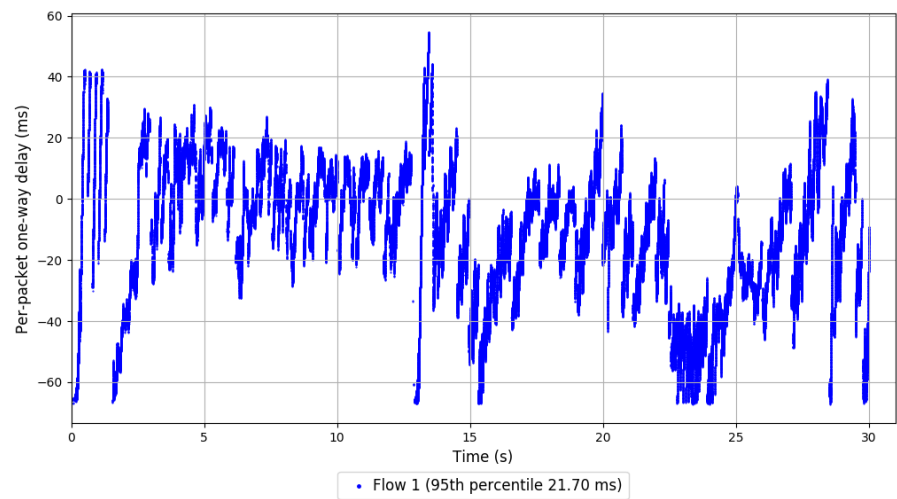
Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2018-12-11 10:06:54
End at: 2018-12-11 10:07:24
Local clock offset: -0.071 ms
Remote clock offset: -35.354 ms


# Below is generated by plot.py at 2018-12-11 10:50:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 79.15 Mbit/s
95th percentile per-packet one-way delay: 21.695 ms
Loss rate: 5.89%
-- Flow 1:
Average throughput: 79.15 Mbit/s
95th percentile per-packet one-way delay: 21.695 ms
Loss rate: 5.89%
```
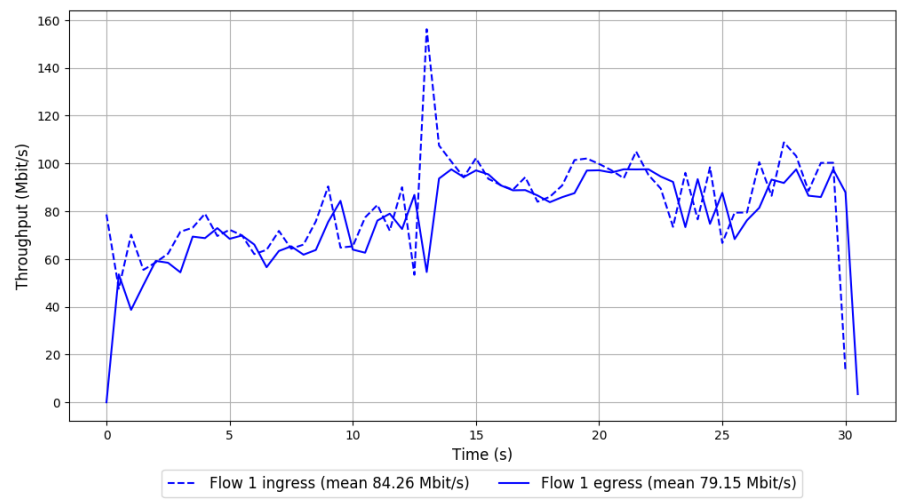
Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2018-12-11 10:28:26
End at: 2018-12-11 10:28:56
Local clock offset: 1.668 ms
Remote clock offset: -14.98 ms


# Below is generated by plot.py at 2018-12-11 10:50:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 39.87 Mbit/s
95th percentile per-packet one-way delay: 76.181 ms
Loss rate: 15.21%
-- Flow 1:
Average throughput: 39.87 Mbit/s
95th percentile per-packet one-way delay: 76.181 ms
Loss rate: 15.21%
```
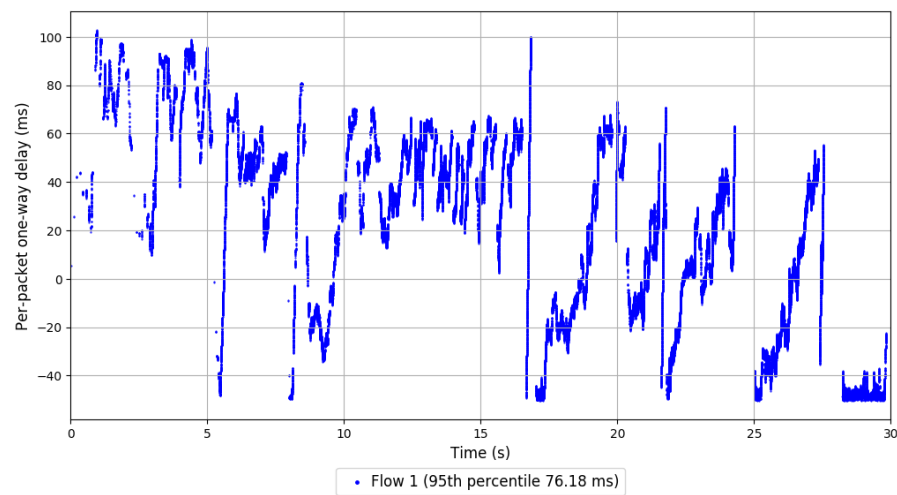
Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-12-11 09:06:02
End at: 2018-12-11 09:06:32
Local clock offset: 4.681 ms
Remote clock offset: 35.934 ms

# Below is generated by plot.py at 2018-12-11 10:50:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.56 Mbit/s
95th percentile per-packet one-way delay: 114.629 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 7.56 Mbit/s
95th percentile per-packet one-way delay: 114.629 ms
Loss rate: 0.84%
```
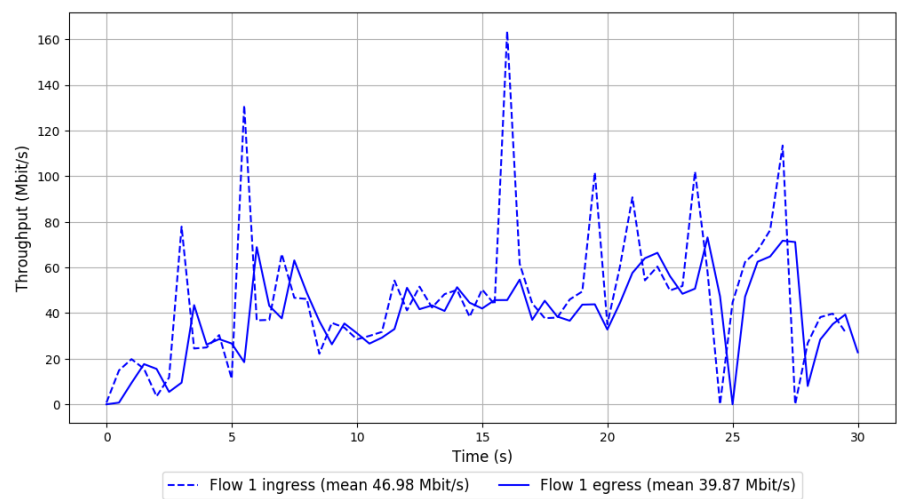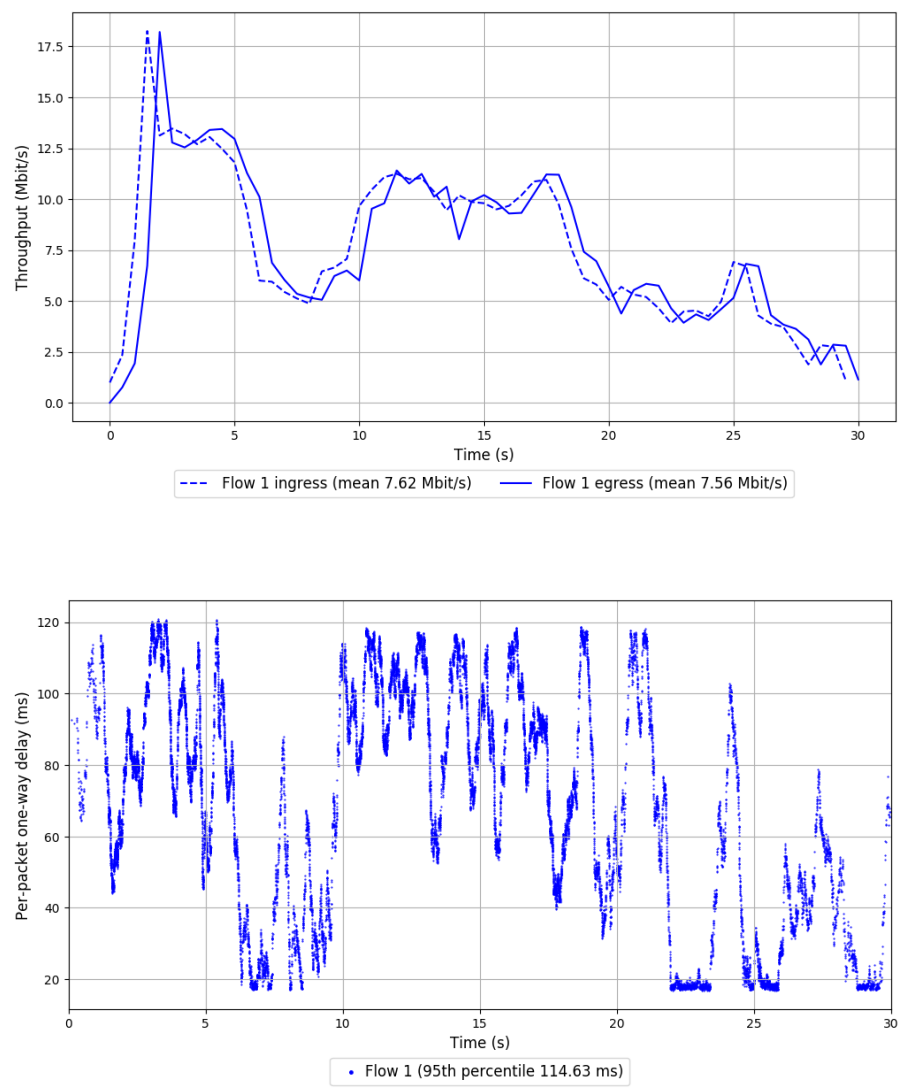
Run 1: Report of PCC-Vivace — Data Link

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-12-11 09:27:30
End at: 2018-12-11 09:28:00
Local clock offset: 6.569 ms
Remote clock offset: -23.23 ms


# Below is generated by plot.py at 2018-12-11 10:50:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.31 Mbit/s
95th percentile per-packet one-way delay: 60.068 ms
Loss rate: 0.49%
-- Flow 1:
Average throughput: 2.31 Mbit/s
95th percentile per-packet one-way delay: 60.068 ms
Loss rate: 0.49%
```

Run 2: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 2.32 Mbit/s) --- Flow 1 egress (mean 2.31 Mbit/s)
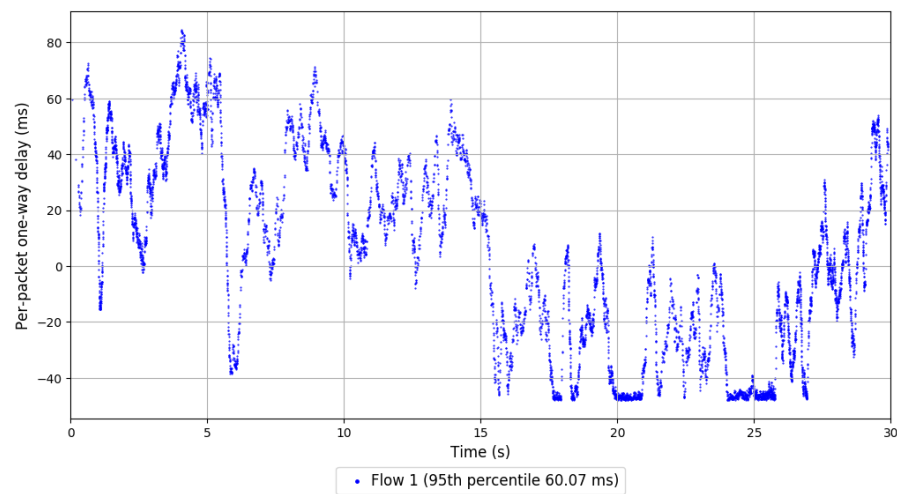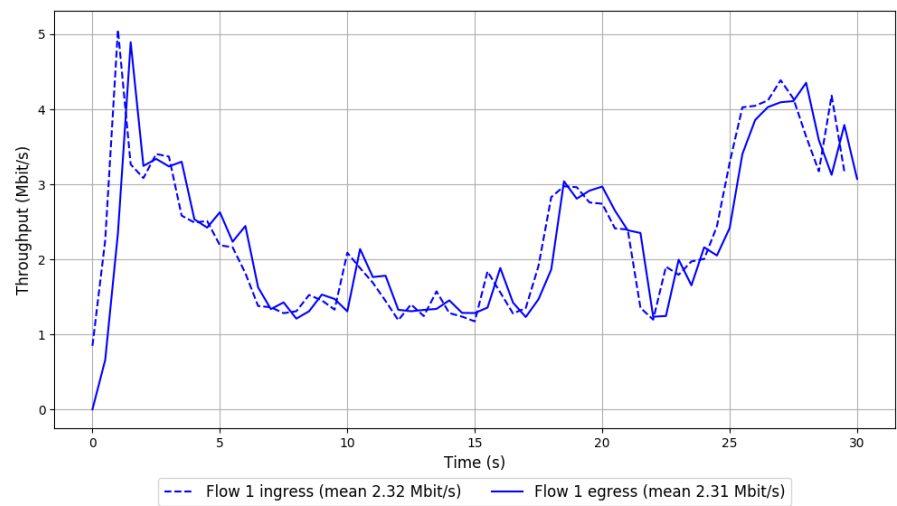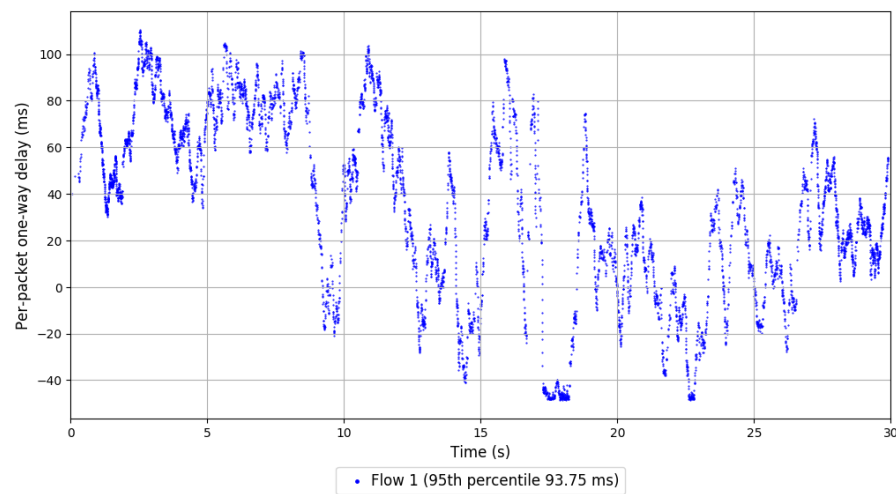

Flow 1 (95th percentile 60.07 ms)

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-12-11 09:48:50
End at: 2018-12-11 09:49:20
Local clock offset: 0.919 ms
Remote clock offset: -21.12 ms


# Below is generated by plot.py at 2018-12-11 10:50:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 93.752 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 93.752 ms
Loss rate: 0.66%
```
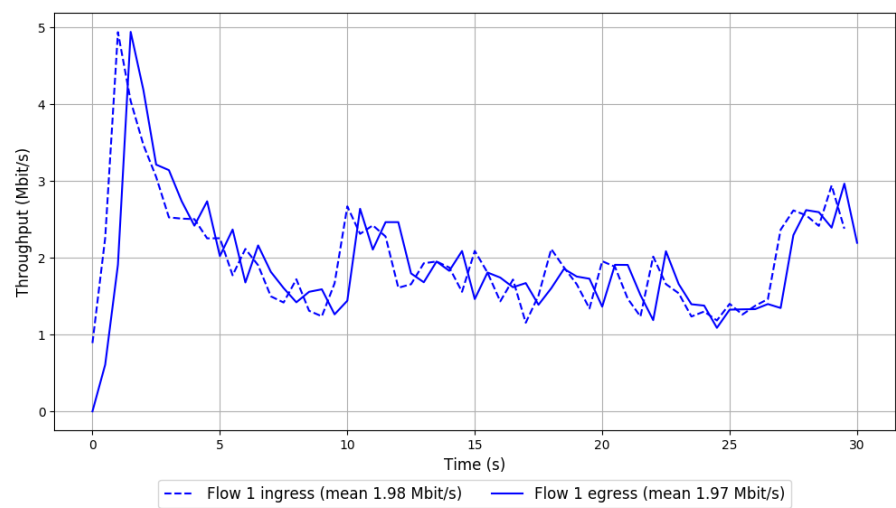
Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 1.98 Mbit/s)   Flow 1 egress (mean 1.97 Mbit/s)
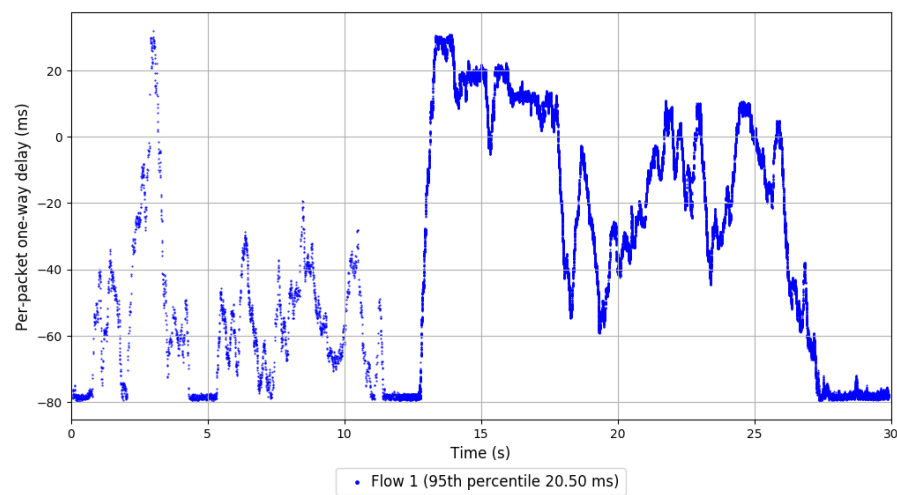

Flow 1 (95th percentile 93.75 ms)

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-12-11 10:10:24
End at: 2018-12-11 10:10:54
Local clock offset: -1.799 ms
Remote clock offset: -49.247 ms


# Below is generated by plot.py at 2018-12-11 10:50:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 24.86 Mbit/s
95th percentile per-packet one-way delay: 20.504 ms
Loss rate: 4.05%
-- Flow 1:
Average throughput: 24.86 Mbit/s
95th percentile per-packet one-way delay: 20.504 ms
Loss rate: 4.05%
```

Run 4: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 25.91 Mbit/s)   Flow 1 egress (mean 24.86 Mbit/s)
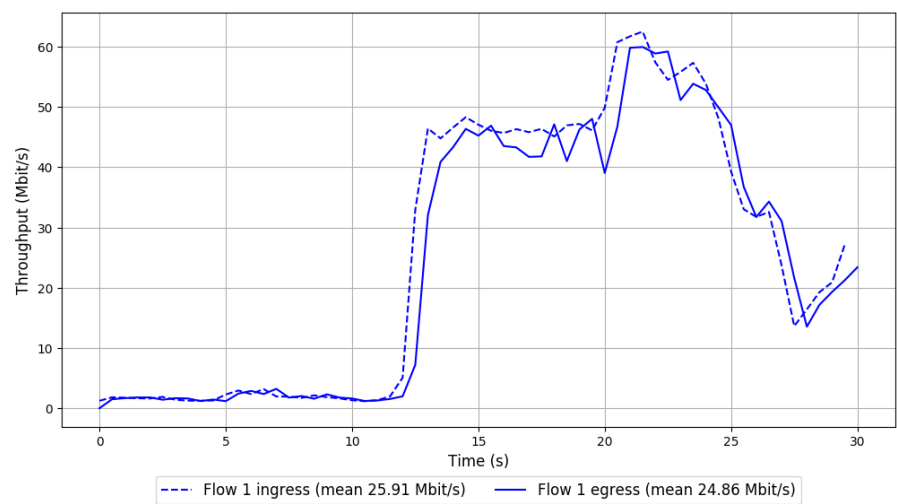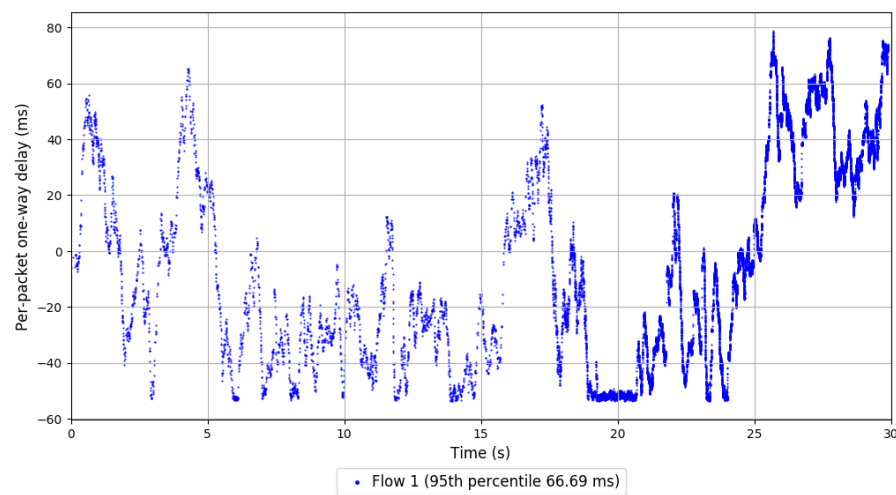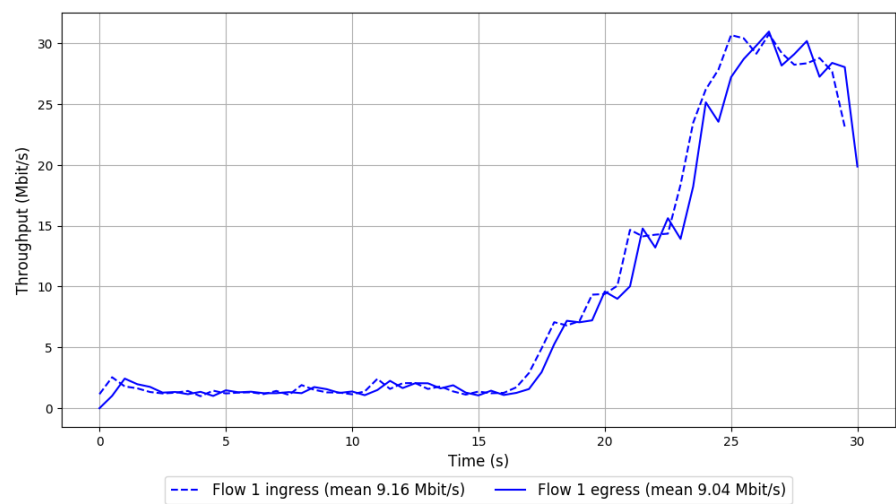

Flow 1 (95th percentile 20.50 ms)

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-12-11 10:31:50
End at: 2018-12-11 10:32:20
Local clock offset: 0.356 ms
Remote clock offset: -19.163 ms

# Below is generated by plot.py at 2018-12-11 10:50:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.04 Mbit/s
95th percentile per-packet one-way delay: 66.685 ms
Loss rate: 1.29%
-- Flow 1:
Average throughput: 9.04 Mbit/s
95th percentile per-packet one-way delay: 66.685 ms
Loss rate: 1.29%
```

Run 5: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 9.16 Mbit/s)   Flow 1 egress (mean 9.04 Mbit/s)
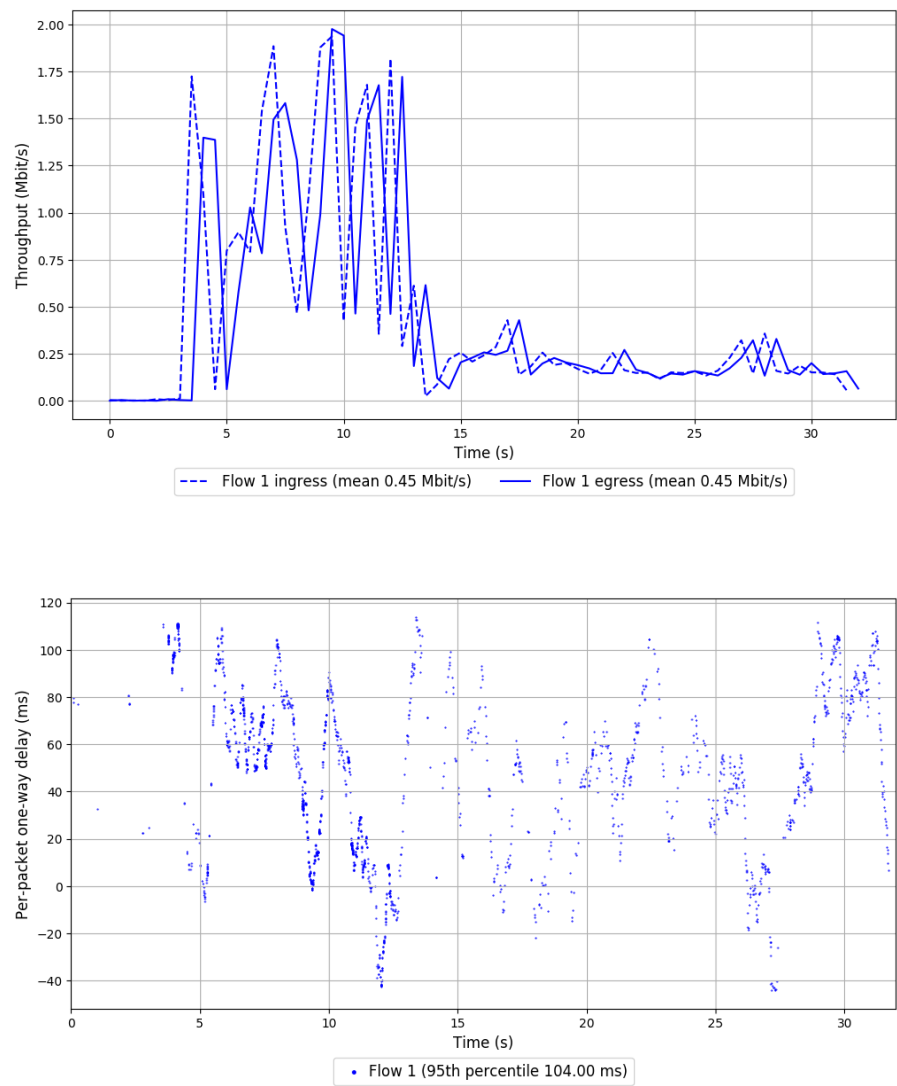

Flow 1 (95th percentile 66.69 ms)

```
Run 1: Statistics of WebRTC media

Start at: 2018-12-11 09:19:30
End at: 2018-12-11 09:20:00
Local clock offset: 3.696 ms
Remote clock offset: -23.991 ms


# Below is generated by plot.py at 2018-12-11 10:50:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 104.005 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 104.005 ms
Loss rate: 0.37%
```

Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-12-11 09:40:56
End at: 2018-12-11 09:41:26
Local clock offset: 4.971 ms
Remote clock offset: 8.605 ms


# Below is generated by plot.py at 2018-12-11 10:50:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 86.601 ms
Loss rate: 0.86%
-- Flow 1:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 86.601 ms
Loss rate: 0.86%
```
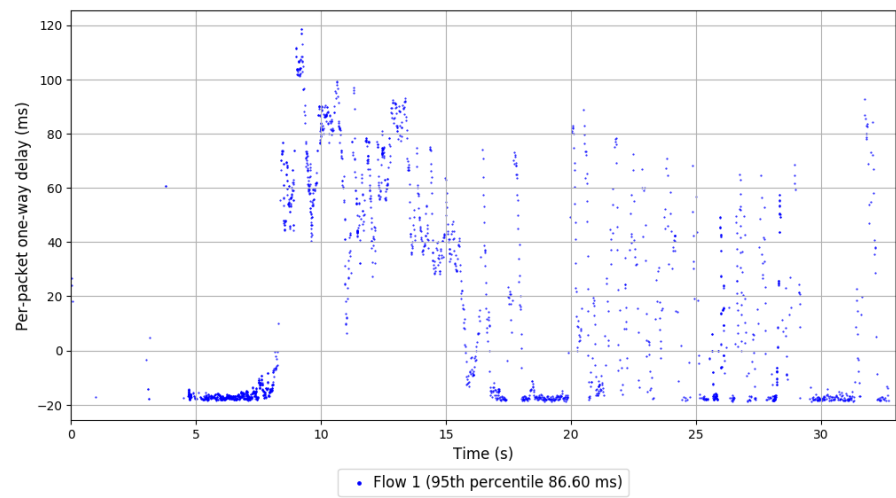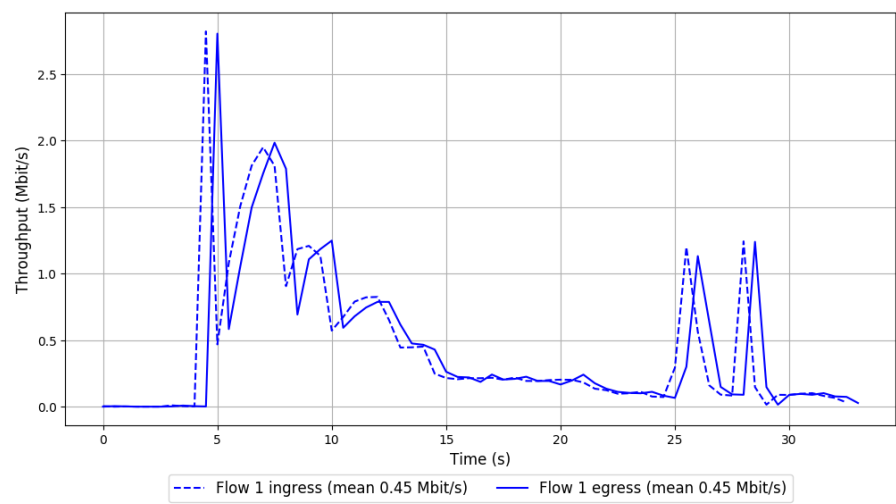
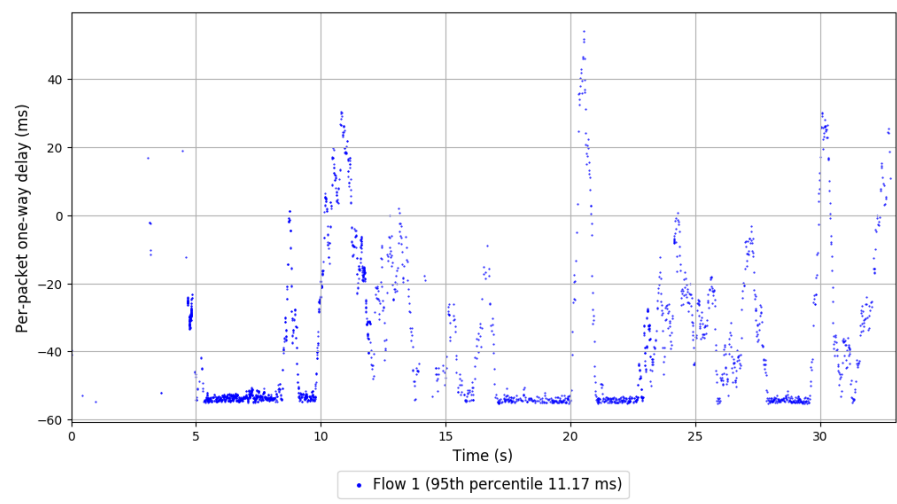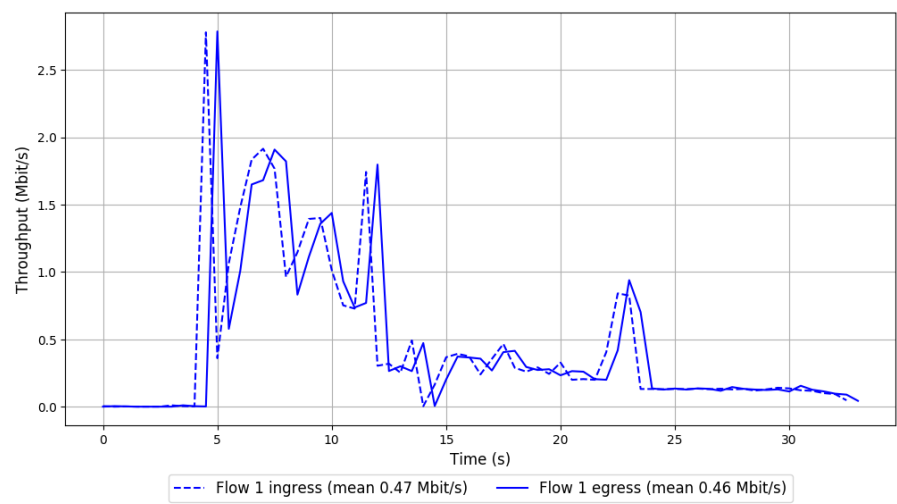Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-12-11 10:02:23
End at: 2018-12-11 10:02:53
Local clock offset: -1.595 ms
Remote clock offset: -25.865 ms


# Below is generated by plot.py at 2018-12-11 10:50:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 11.173 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 11.173 ms
Loss rate: 0.01%
```

Run 3: Report of WebRTC media — Data Link

Flow 1 ingress (mean 0.47 Mbit/s) --- Flow 1 egress (mean 0.46 Mbit/s)
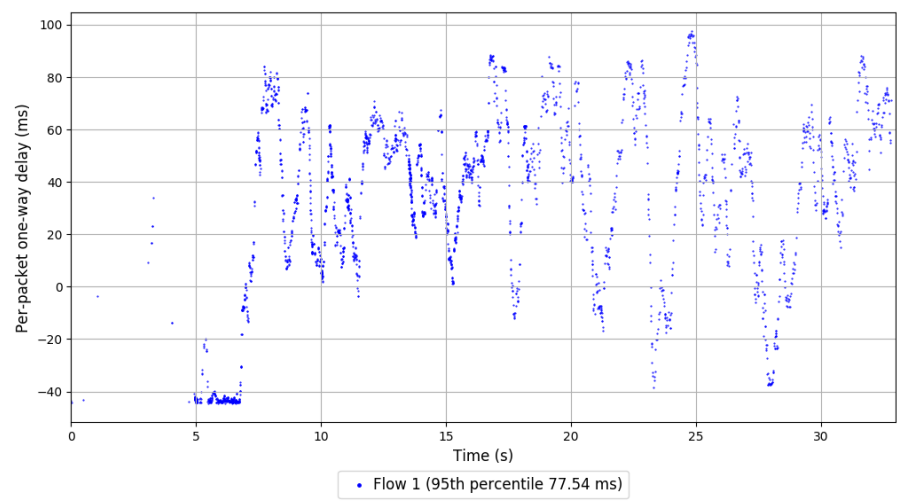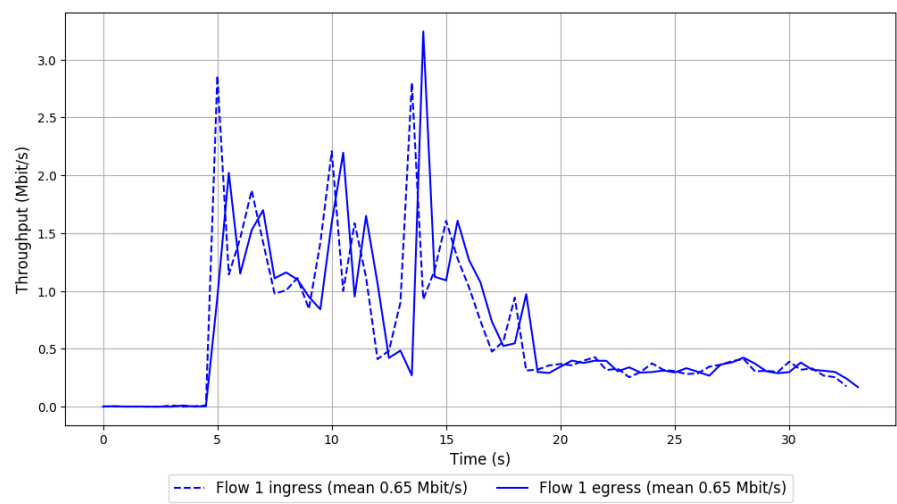

Flow 1 (95th percentile 11.17 ms)

```
Run 4: Statistics of WebRTC media

Start at: 2018-12-11 10:23:55
End at: 2018-12-11 10:24:25
Local clock offset: 1.296 ms
Remote clock offset: -10.339 ms


# Below is generated by plot.py at 2018-12-11 10:50:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.65 Mbit/s
95th percentile per-packet one-way delay: 77.539 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.65 Mbit/s
95th percentile per-packet one-way delay: 77.539 ms
Loss rate: 0.26%
```

Run 4: Report of WebRTC media — Data Link

Flow 1 ingress (mean 0.65 Mbit/s) --- Flow 1 egress (mean 0.65 Mbit/s)

• Flow 1 (95th percentile 77.54 ms)

```
Run 5: Statistics of WebRTC media

Start at: 2018-12-11 10:45:19
End at: 2018-12-11 10:45:49
Local clock offset: -1.833 ms
Remote clock offset: -3.189 ms


# Below is generated by plot.py at 2018-12-11 10:50:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.98 Mbit/s
95th percentile per-packet one-way delay: 21.983 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 0.98 Mbit/s
95th percentile per-packet one-way delay: 21.983 ms
Loss rate: 0.03%
```

Run 5: Report of WebRTC media — Data Link