Pantheon Report

Generated at 2018-12-20 06:33:09 (UTC).

Data path: China on `eno1` (*remote*) →AWS Korea on `ens5` (*local*).

Repeated the test of 19 congestion control schemes 5 times.

Each test lasted for 30 seconds running 1 flow.

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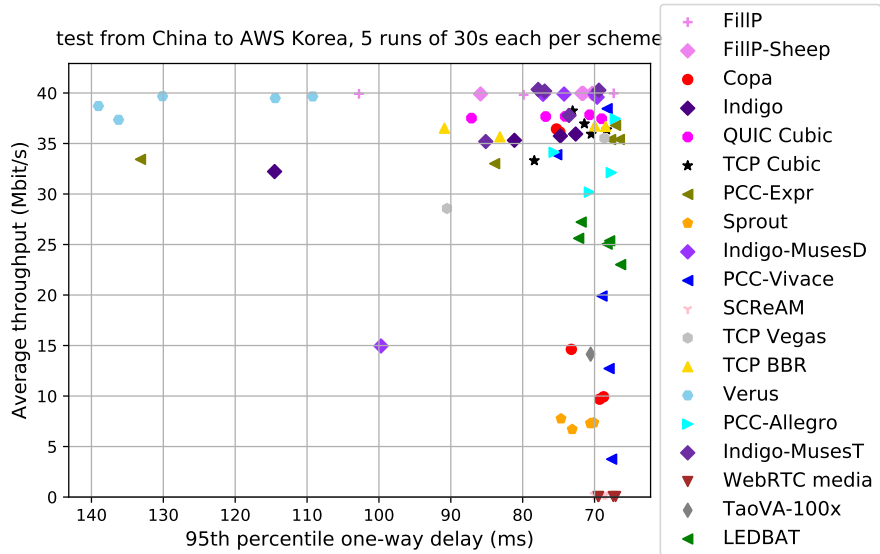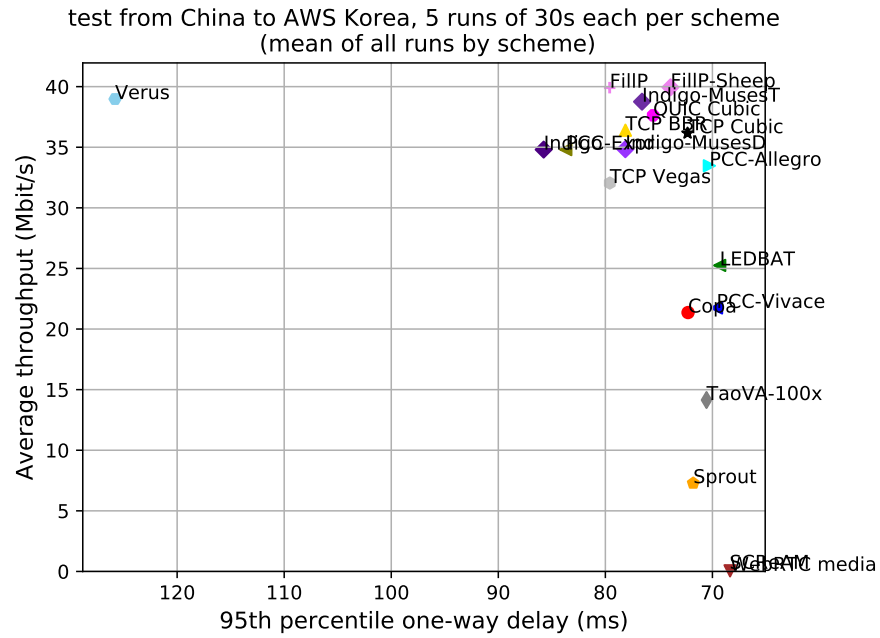
```
System info:
Linux 4.15.0-1029-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

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 China to AWS Korea, 5 runs of 30s each per scheme
(mean of all runs by scheme)

test from China to AWS Korea, 5 runs of 30s each per scheme

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scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	4	36.40	78.13	14.84
Copa	5	21.36	72.28	9.11
TCP Cubic	5	36.16	72.32	1.60
FillP	5	39.92	79.60	15.95
FillP-Sheep	5	39.94	73.92	10.38
Indigo	4	34.80	85.76	36.80
Indigo-MusesD	5	34.84	78.13	36.64
Indigo-MusesT	5	38.76	76.58	6.68
LEDBAT	5	25.25	69.32	0.37
PCC-Allegro	4	33.47	70.28	2.48
PCC-Expr	5	34.80	83.70	26.34
QUIC Cubic	5	37.63	75.54	1.92
SCReAM	5	0.21	68.41	0.29
Sprout	5	7.28	71.79	0.37
TaoVA-100x	1	14.14	70.55	8.50
TCP Vegas	2	32.05	79.59	1.72
Verus	5	38.98	125.80	25.95
PCC-Vivace	5	21.74	69.62	4.65
WebRTC media	4	0.05	68.35	0.00

Run 1: Statistics of TCP BBR

Start at: 2018-12-20 04:37:02
End at: 2018-12-20 04:37:32
Local clock offset: 9.784 ms
Remote clock offset: 4.838 ms

Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-12-20 04:59:30
End at: 2018-12-20 05:00:00
Local clock offset: 7.395 ms
Remote clock offset: 16.038 ms


# Below is generated by plot.py at 2018-12-20 06:28:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 36.74 Mbit/s
95th percentile per-packet one-way delay: 69.973 ms
Loss rate: 15.46%
-- Flow 1:
Average throughput: 36.74 Mbit/s
95th percentile per-packet one-way delay: 69.973 ms
Loss rate: 15.46%
```
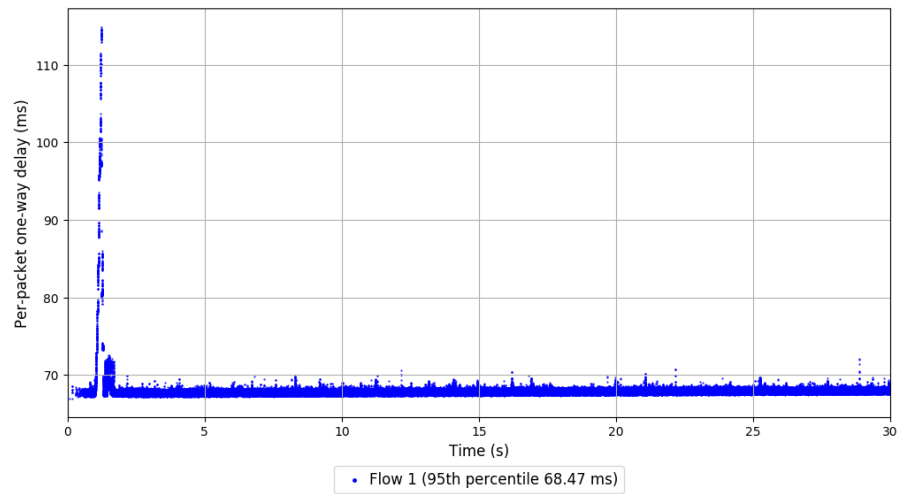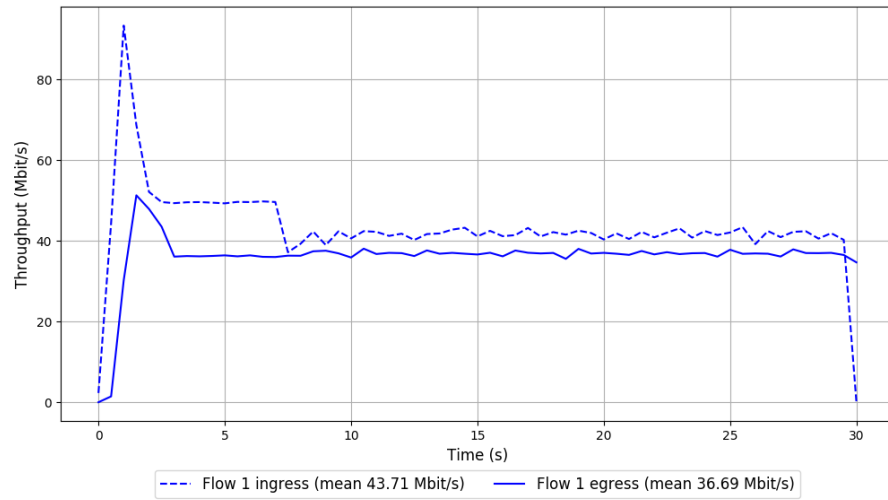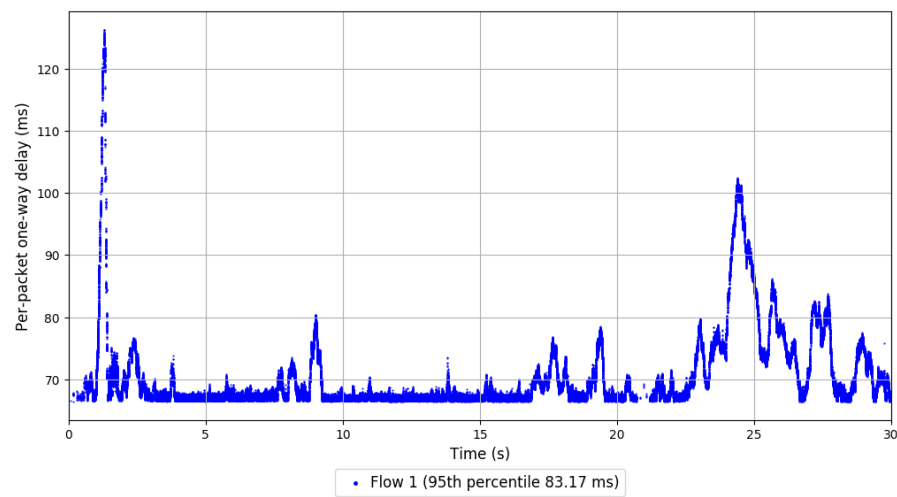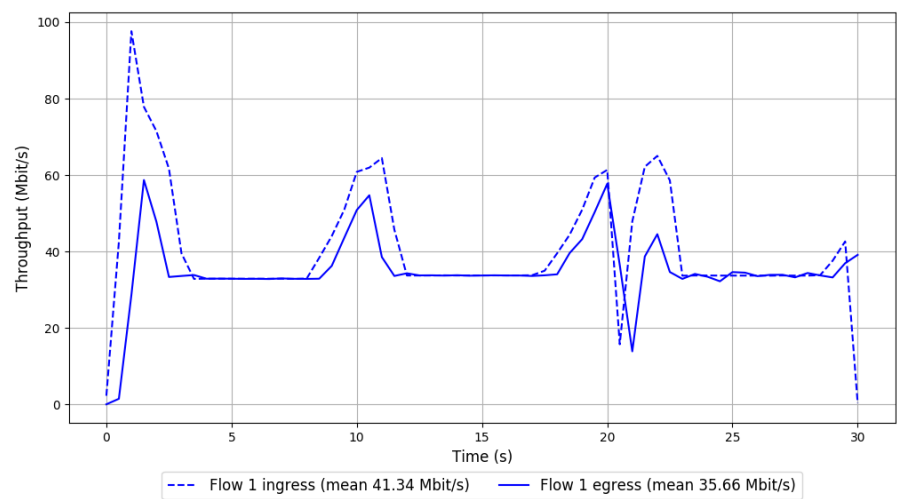
Run 2: Report of TCP BBR — Data Link

Flow 1 ingress (mean 43.32 Mbit/s)　　Flow 1 egress (mean 36.74 Mbit/s)

Flow 1 (95th percentile 69.97 ms)

```
Run 3: Statistics of TCP BBR

Start at: 2018-12-20 05:21:43
End at: 2018-12-20 05:22:13
Local clock offset: 10.207 ms
Remote clock offset: 56.884 ms


# Below is generated by plot.py at 2018-12-20 06:28:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 36.69 Mbit/s
95th percentile per-packet one-way delay: 68.470 ms
Loss rate: 16.34%
-- Flow 1:
Average throughput: 36.69 Mbit/s
95th percentile per-packet one-way delay: 68.470 ms
Loss rate: 16.34%
```
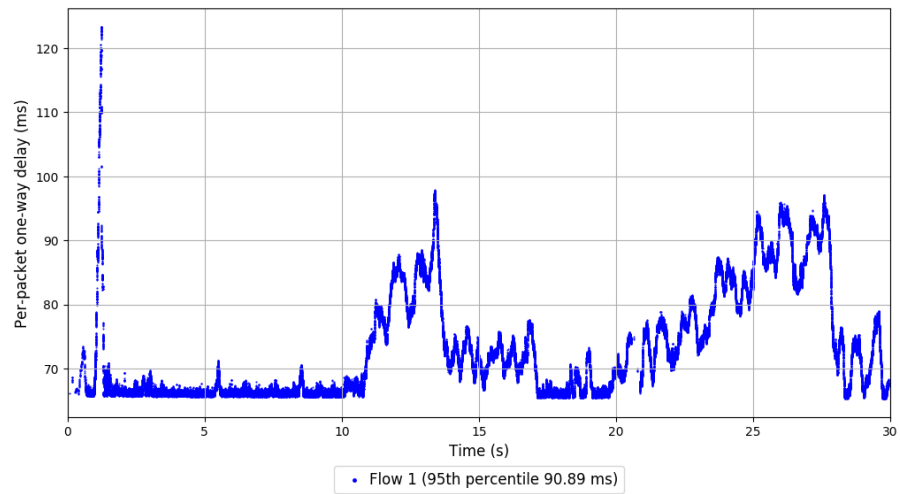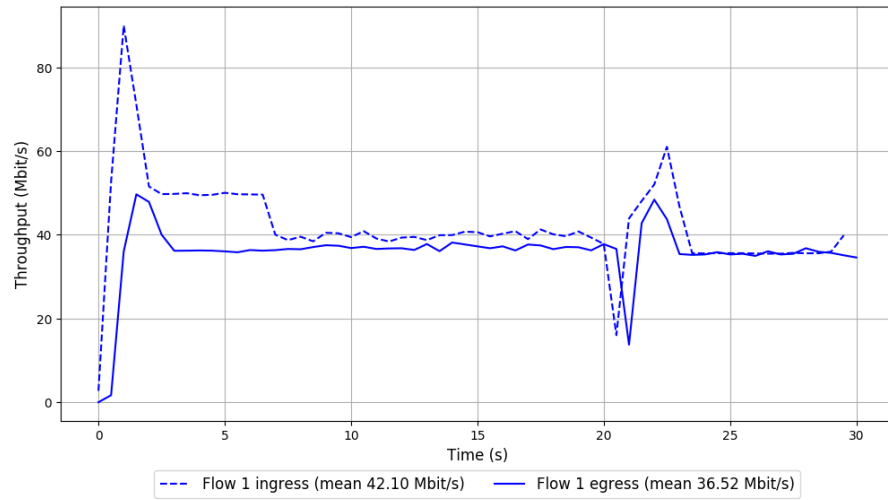
Run 3: Report of TCP BBR — Data Link

```
Run 4: Statistics of TCP BBR

Start at: 2018-12-20 05:43:51
End at: 2018-12-20 05:44:21
Local clock offset: 10.295 ms
Remote clock offset: 54.812 ms

# Below is generated by plot.py at 2018-12-20 06:28:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 35.66 Mbit/s
95th percentile per-packet one-way delay: 83.173 ms
Loss rate: 14.03%
-- Flow 1:
Average throughput: 35.66 Mbit/s
95th percentile per-packet one-way delay: 83.173 ms
Loss rate: 14.03%
```
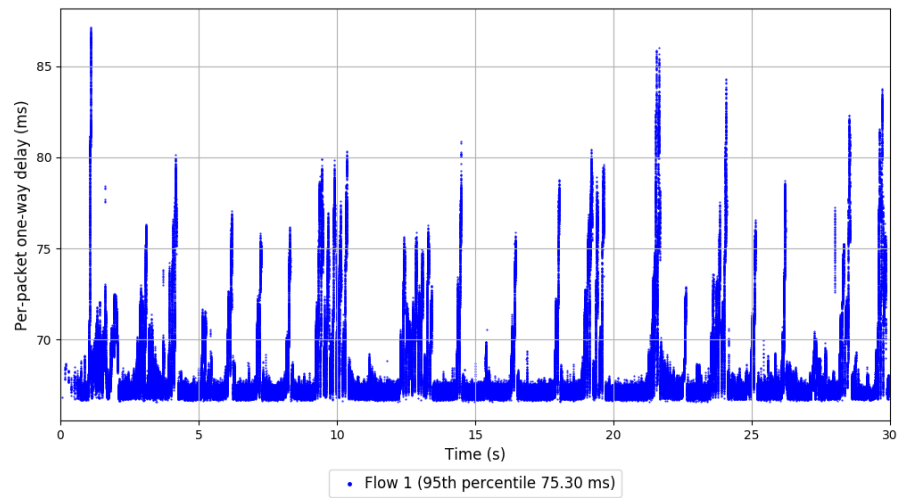
Run 4: Report of TCP BBR — Data Link

```
Run 5: Statistics of TCP BBR

Start at: 2018-12-20 06:06:03
End at: 2018-12-20 06:06:33
Local clock offset: 10.84 ms
Remote clock offset: 56.579 ms


# Below is generated by plot.py at 2018-12-20 06:28:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 36.52 Mbit/s
95th percentile per-packet one-way delay: 90.889 ms
Loss rate: 13.55%
-- Flow 1:
Average throughput: 36.52 Mbit/s
95th percentile per-packet one-way delay: 90.889 ms
Loss rate: 13.55%
```
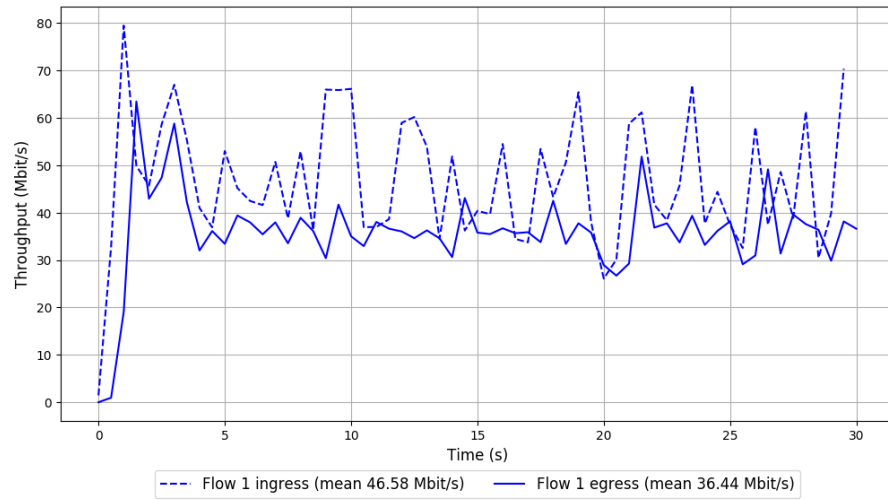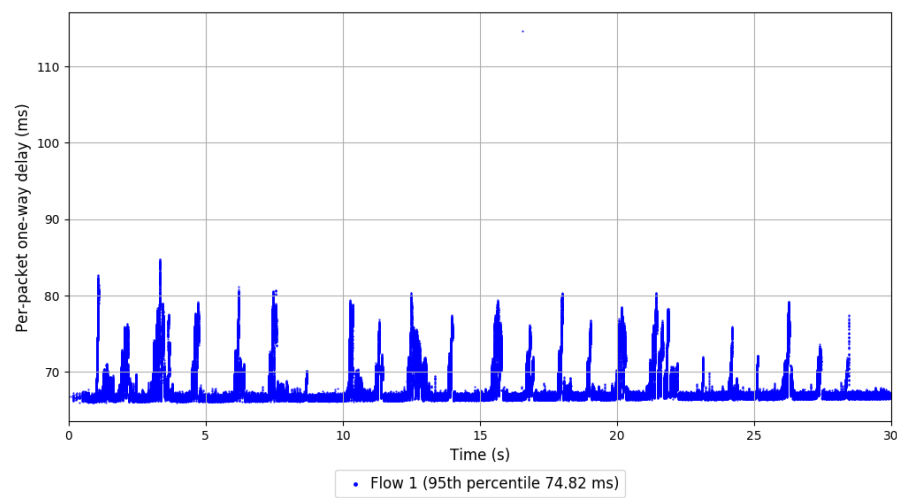
Run 5: Report of TCP BBR — Data Link

Flow 1 ingress (mean 42.10 Mbit/s)   ——— Flow 1 egress (mean 36.52 Mbit/s)

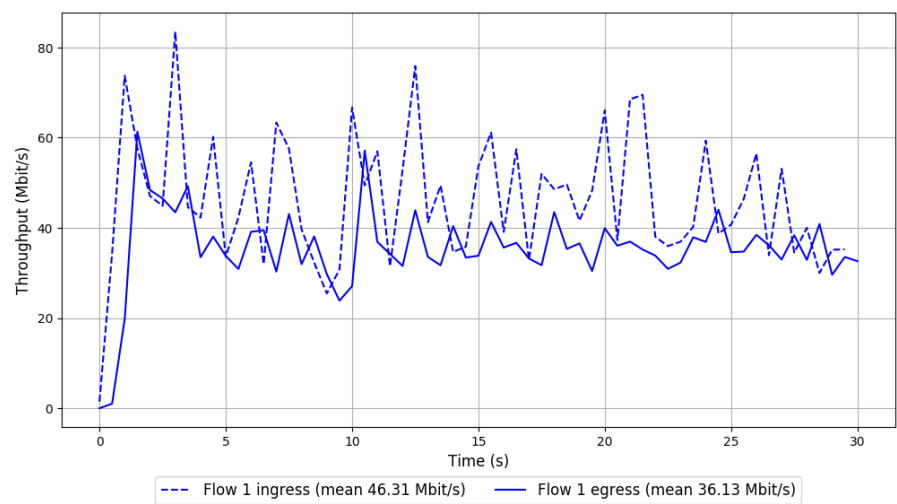
· Flow 1 (95th percentile 90.89 ms)

14

```
Run 1: Statistics of Copa

Start at: 2018-12-20 04:54:50
End at: 2018-12-20 04:55:20
Local clock offset: 8.015 ms
Remote clock offset: 6.604 ms

# Below is generated by plot.py at 2018-12-20 06:29:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 36.44 Mbit/s
95th percentile per-packet one-way delay: 75.299 ms
Loss rate: 22.03%
-- Flow 1:
Average throughput: 36.44 Mbit/s
95th percentile per-packet one-way delay: 75.299 ms
Loss rate: 22.03%
```
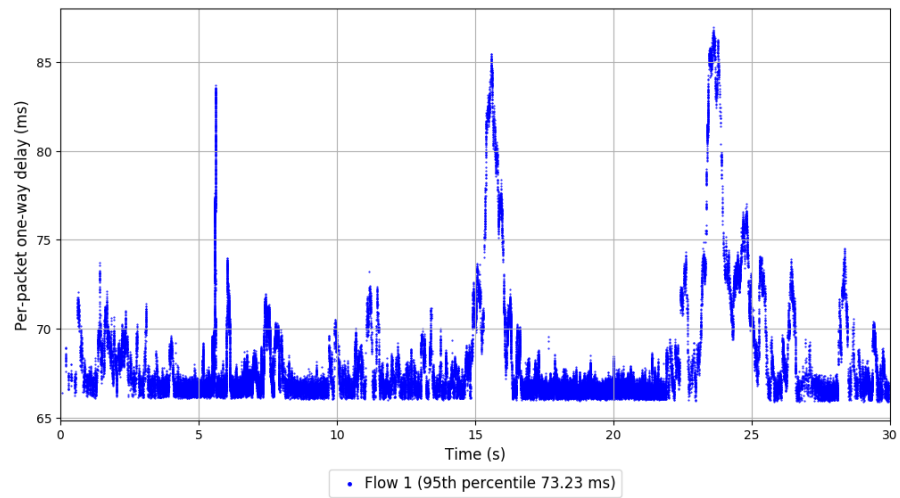
Run 1: Report of Copa — Data Link

```
Run 2: Statistics of Copa

Start at: 2018-12-20 05:17:02
End at: 2018-12-20 05:17:32
Local clock offset: 9.189 ms
Remote clock offset: 52.964 ms

# Below is generated by plot.py at 2018-12-20 06:29:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 36.13 Mbit/s
95th percentile per-packet one-way delay: 74.821 ms
Loss rate: 22.25%
-- Flow 1:
Average throughput: 36.13 Mbit/s
95th percentile per-packet one-way delay: 74.821 ms
Loss rate: 22.25%
```
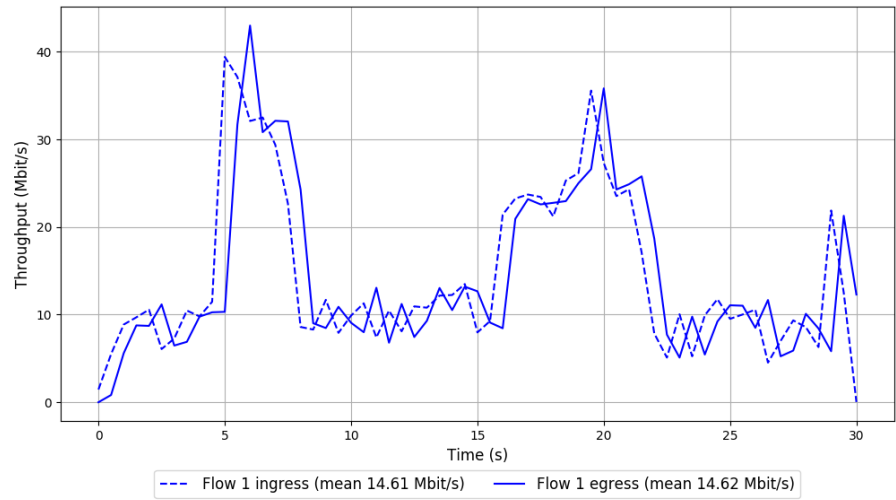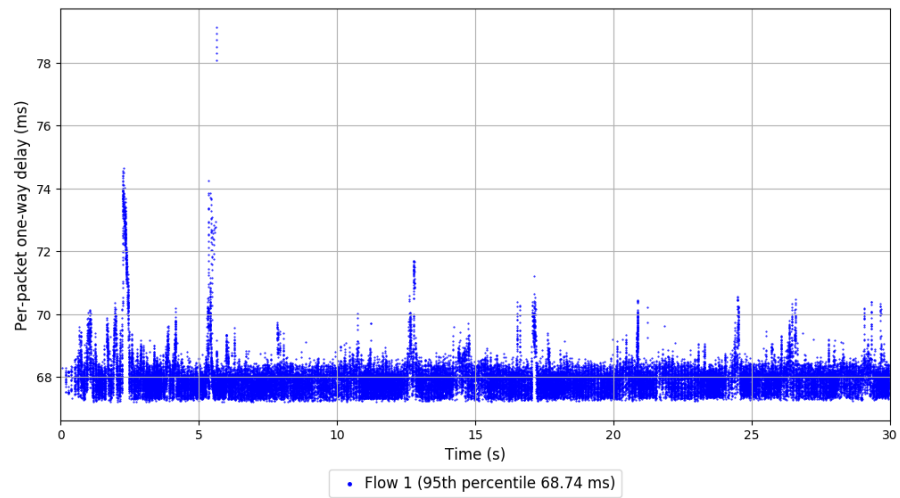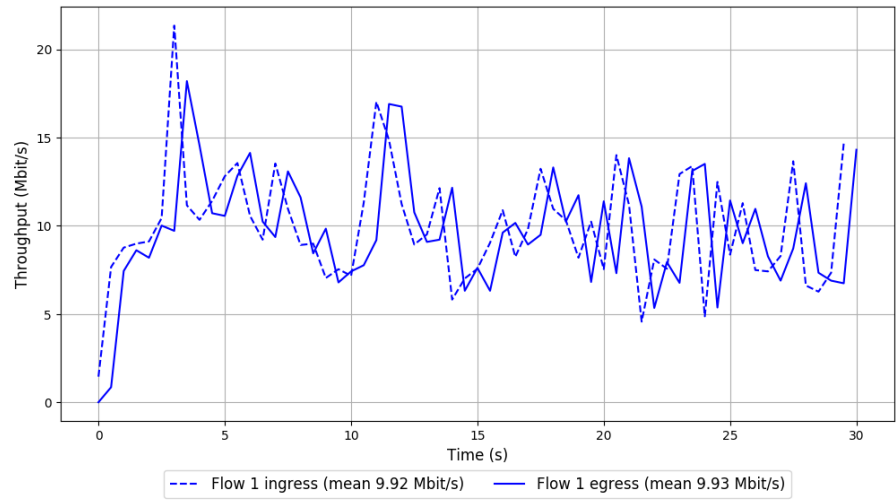
Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2018-12-20 05:39:11
End at: 2018-12-20 05:39:41
Local clock offset: 10.412 ms
Remote clock offset: 56.55 ms

# Below is generated by plot.py at 2018-12-20 06:29:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 14.62 Mbit/s
95th percentile per-packet one-way delay: 73.230 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 14.62 Mbit/s
95th percentile per-packet one-way delay: 73.230 ms
Loss rate: 0.26%
```

Run 3: Report of Copa — Data Link

```
Run 4: Statistics of Copa

Start at: 2018-12-20 06:01:24
End at: 2018-12-20 06:01:54
Local clock offset: 10.702 ms
Remote clock offset: 54.113 ms

# Below is generated by plot.py at 2018-12-20 06:29:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.93 Mbit/s
95th percentile per-packet one-way delay: 68.744 ms
Loss rate: 0.29%
-- Flow 1:
Average throughput: 9.93 Mbit/s
95th percentile per-packet one-way delay: 68.744 ms
Loss rate: 0.29%
```
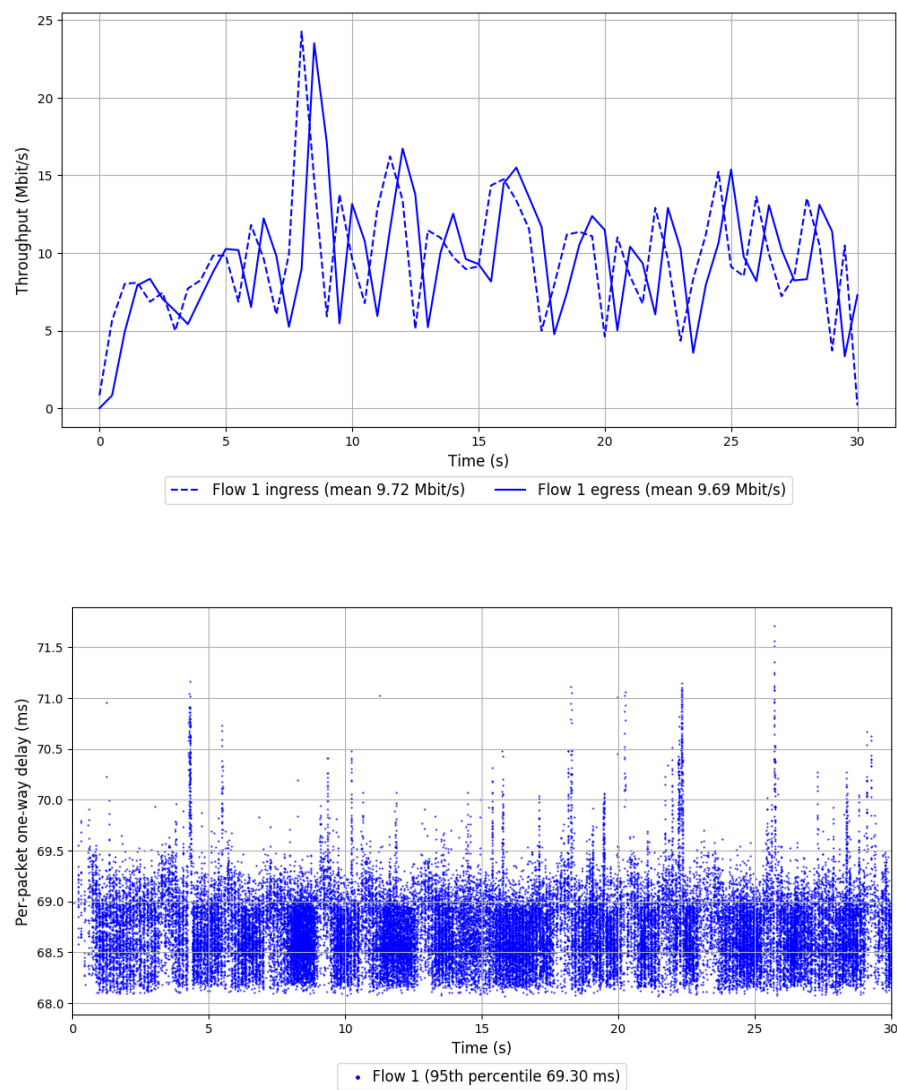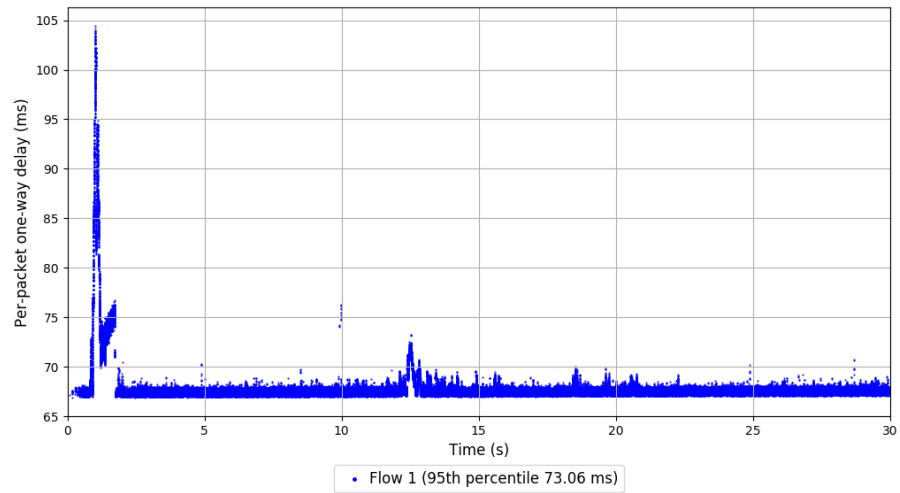
Run 4: Report of Copa — Data Link

Flow 1 ingress (mean 9.92 Mbit/s) --- Flow 1 egress (mean 9.93 Mbit/s)

Flow 1 (95th percentile 68.74 ms)

```
Run 5: Statistics of Copa

Start at: 2018-12-20 06:23:43
End at: 2018-12-20 06:24:14
Local clock offset: 9.386 ms
Remote clock offset: 46.73 ms

# Below is generated by plot.py at 2018-12-20 06:29:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.69 Mbit/s
95th percentile per-packet one-way delay: 69.299 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 9.69 Mbit/s
95th percentile per-packet one-way delay: 69.299 ms
Loss rate: 0.71%
```
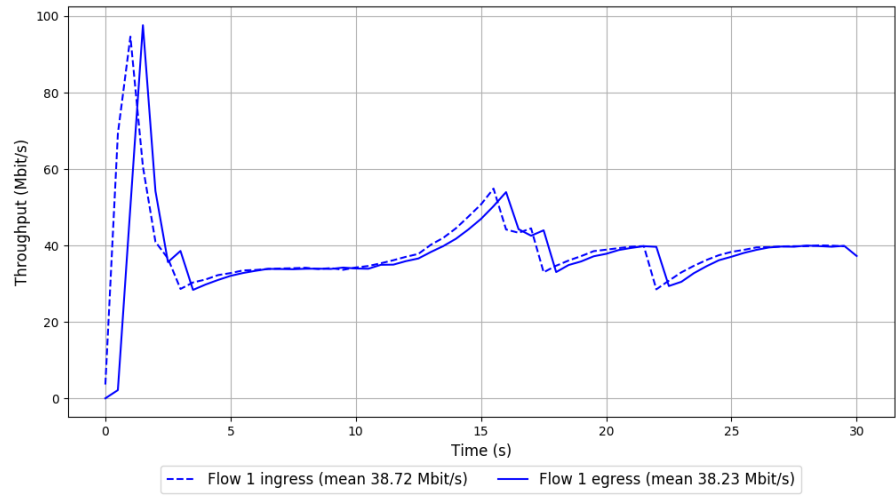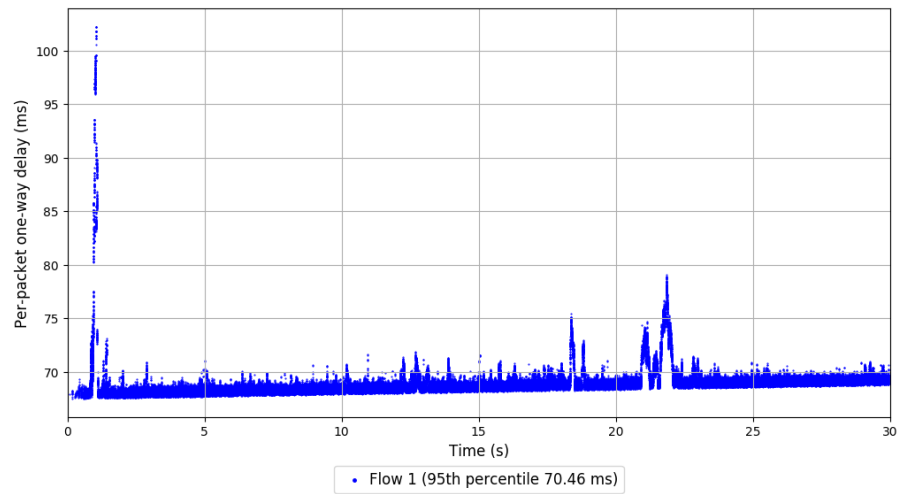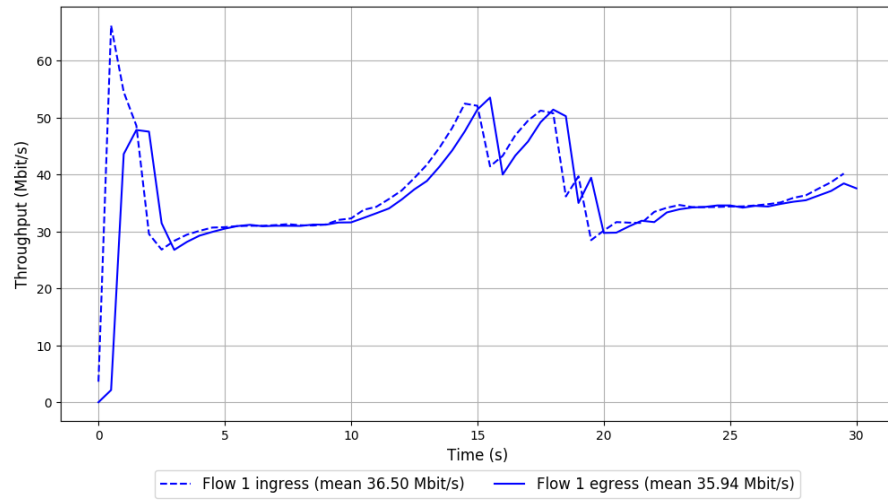
Run 5: Report of Copa — Data Link

Flow 1 ingress (mean 9.72 Mbit/s)   Flow 1 egress (mean 9.69 Mbit/s)

Flow 1 (95th percentile 69.30 ms)

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```
Run 1: Statistics of TCP Cubic

Start at: 2018-12-20 04:41:50
End at: 2018-12-20 04:42:20
Local clock offset: 8.428 ms
Remote clock offset: 5.466 ms

# Below is generated by plot.py at 2018-12-20 06:29:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 38.23 Mbit/s
95th percentile per-packet one-way delay: 73.057 ms
Loss rate: 1.59%
-- Flow 1:
Average throughput: 38.23 Mbit/s
95th percentile per-packet one-way delay: 73.057 ms
Loss rate: 1.59%
```
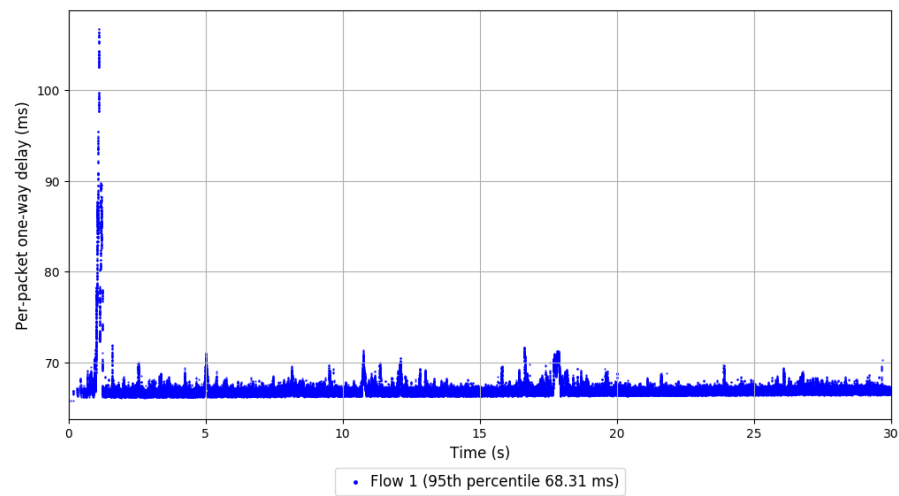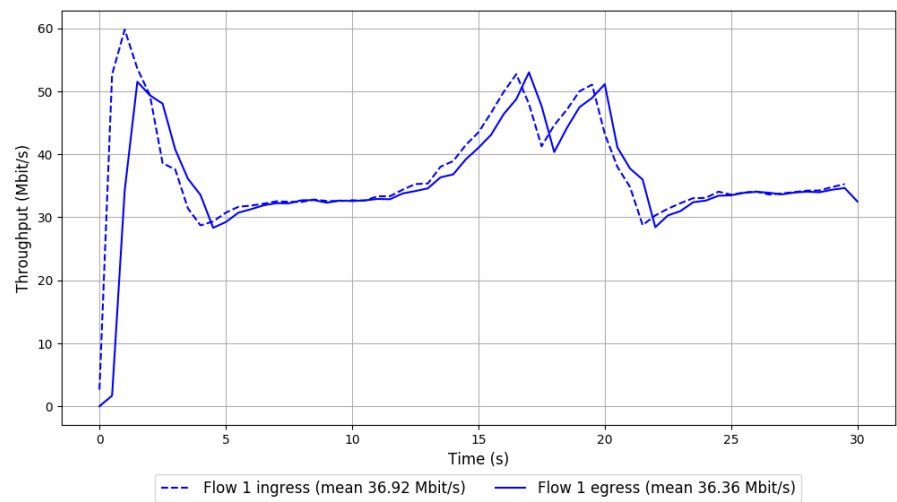
Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 38.72 Mbit/s)　　Flow 1 egress (mean 38.23 Mbit/s)
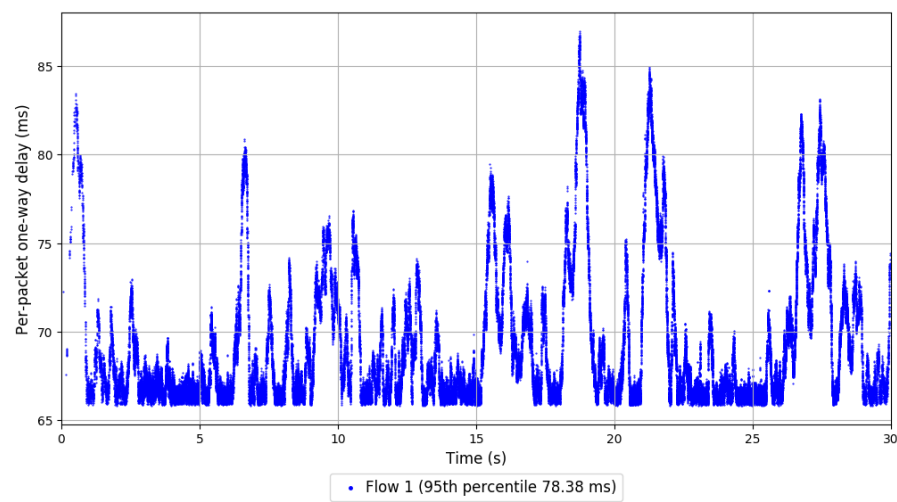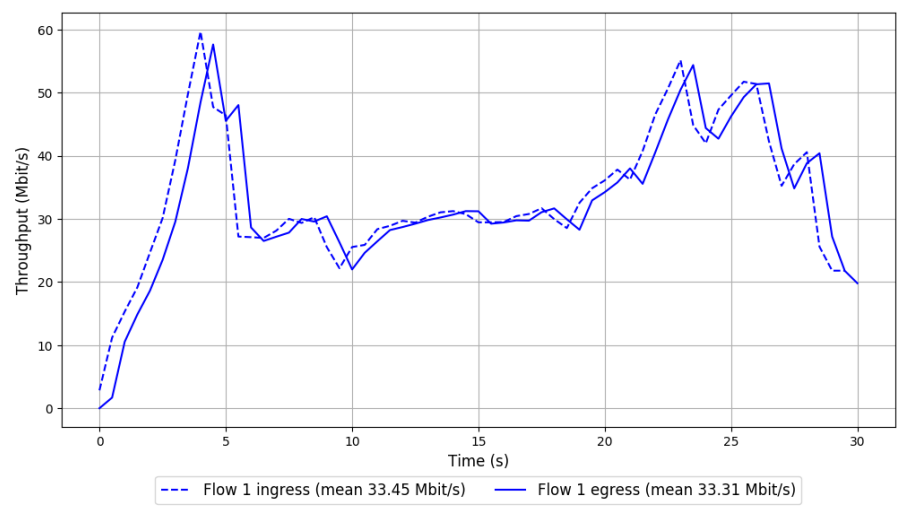

Flow 1 (95th percentile 73.06 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2018-12-20 05:04:14
End at: 2018-12-20 05:04:44
Local clock offset: 7.588 ms
Remote clock offset: 31.819 ms


# Below is generated by plot.py at 2018-12-20 06:29:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 35.94 Mbit/s
95th percentile per-packet one-way delay: 70.461 ms
Loss rate: 1.86%
-- Flow 1:
Average throughput: 35.94 Mbit/s
95th percentile per-packet one-way delay: 70.461 ms
Loss rate: 1.86%
```
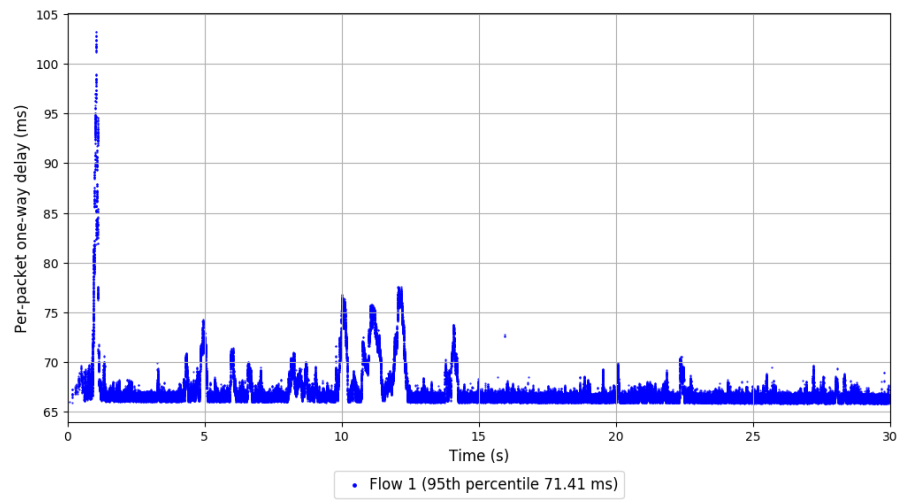
Run 2: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 36.50 Mbit/s) --- Flow 1 egress (mean 35.94 Mbit/s)

Flow 1 (95th percentile 70.46 ms)

```
Run 3: Statistics of TCP Cubic

Start at: 2018-12-20 05:26:25
End at: 2018-12-20 05:26:55
Local clock offset: 9.9 ms
Remote clock offset: 60.781 ms


# Below is generated by plot.py at 2018-12-20 06:29:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 36.36 Mbit/s
95th percentile per-packet one-way delay: 68.315 ms
Loss rate: 1.85%
-- Flow 1:
Average throughput: 36.36 Mbit/s
95th percentile per-packet one-way delay: 68.315 ms
Loss rate: 1.85%
```

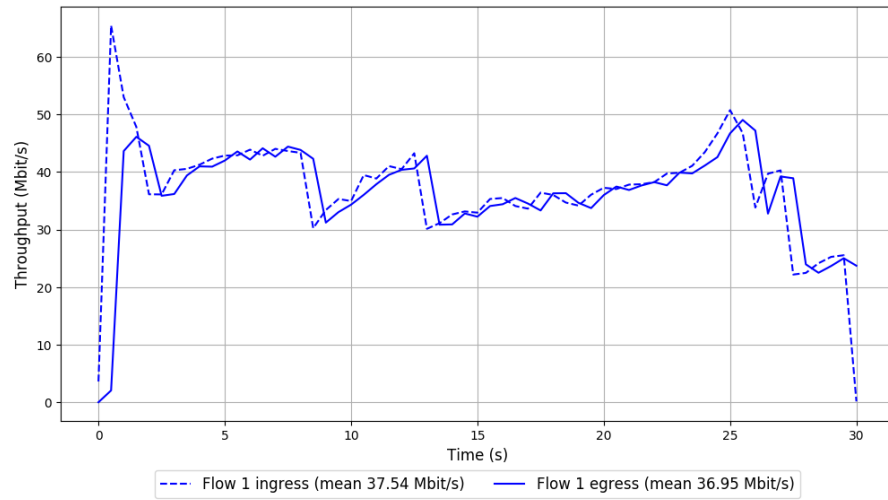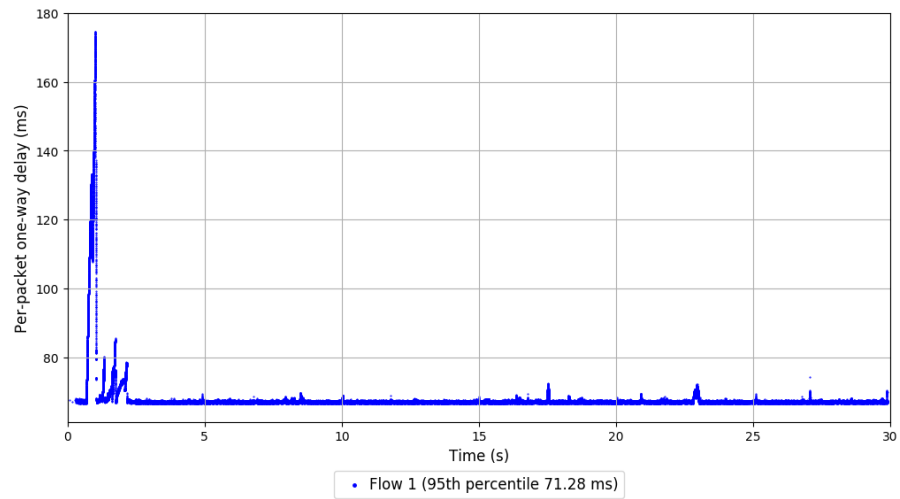Run 3: Report of TCP Cubic — Data Link

```
Run 4: Statistics of TCP Cubic

Start at: 2018-12-20 05:48:33
End at: 2018-12-20 05:49:03
Local clock offset: 10.325 ms
Remote clock offset: 54.906 ms


# Below is generated by plot.py at 2018-12-20 06:29:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 33.31 Mbit/s
95th percentile per-packet one-way delay: 78.378 ms
Loss rate: 0.80%
-- Flow 1:
Average throughput: 33.31 Mbit/s
95th percentile per-packet one-way delay: 78.378 ms
Loss rate: 0.80%
```
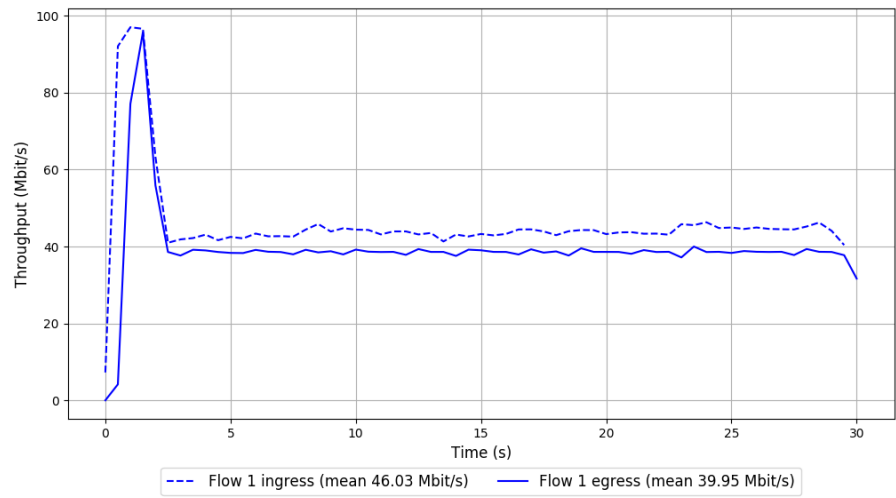
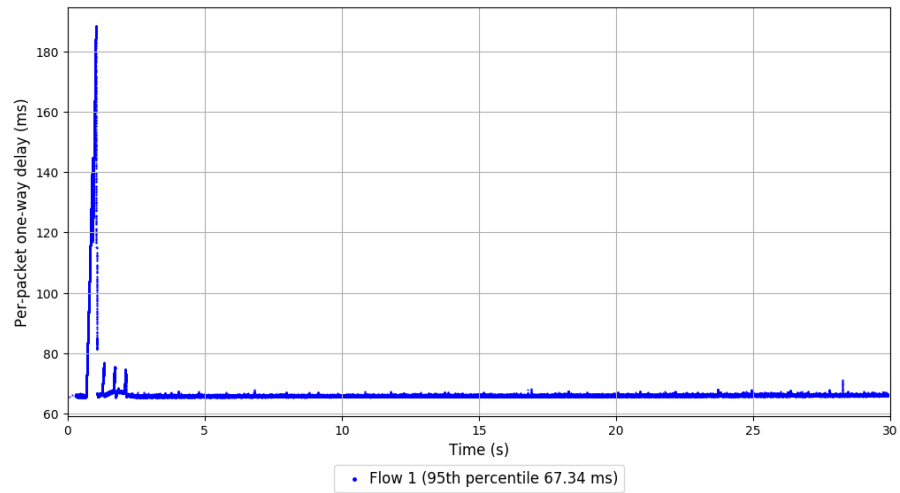Run 4: Report of TCP Cubic — Data Link

```
Run 5: Statistics of TCP Cubic

Start at: 2018-12-20 06:10:45
End at: 2018-12-20 06:11:15
Local clock offset: 10.453 ms
Remote clock offset: 52.972 ms


# Below is generated by plot.py at 2018-12-20 06:29:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 36.95 Mbit/s
95th percentile per-packet one-way delay: 71.409 ms
Loss rate: 1.90%
-- Flow 1:
Average throughput: 36.95 Mbit/s
95th percentile per-packet one-way delay: 71.409 ms
Loss rate: 1.90%
```
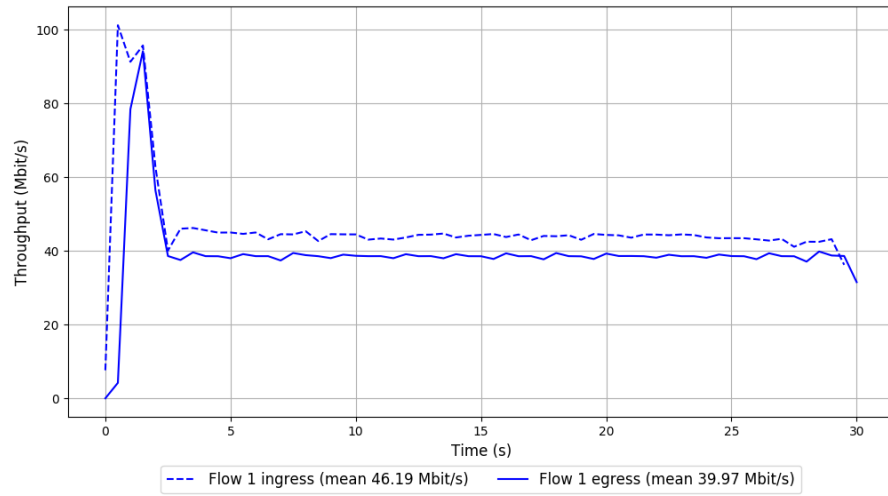
Run 5: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 37.54 Mbit/s) ----- Flow 1 egress (mean 36.95 Mbit/s)
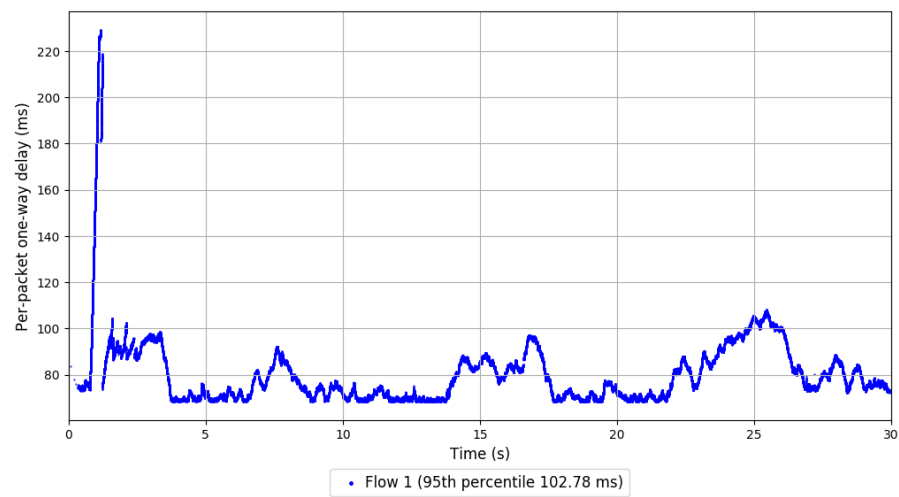

Flow 1 (95th percentile 71.41 ms)

```
Run 1: Statistics of FillP

Start at: 2018-12-20 04:56:02
End at: 2018-12-20 04:56:32
Local clock offset: 7.739 ms
Remote clock offset: 6.181 ms


# Below is generated by plot.py at 2018-12-20 06:29:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 39.95 Mbit/s
95th percentile per-packet one-way delay: 71.281 ms
Loss rate: 13.50%
-- Flow 1:
Average throughput: 39.95 Mbit/s
95th percentile per-packet one-way delay: 71.281 ms
Loss rate: 13.50%
```

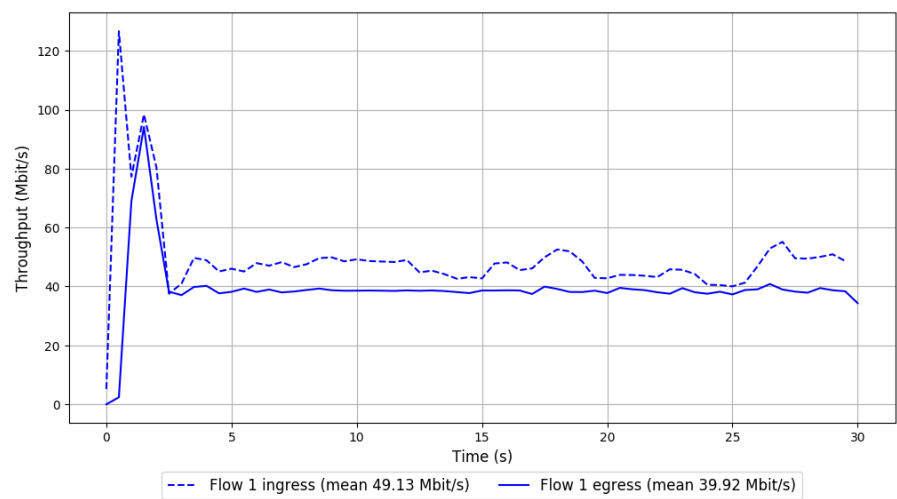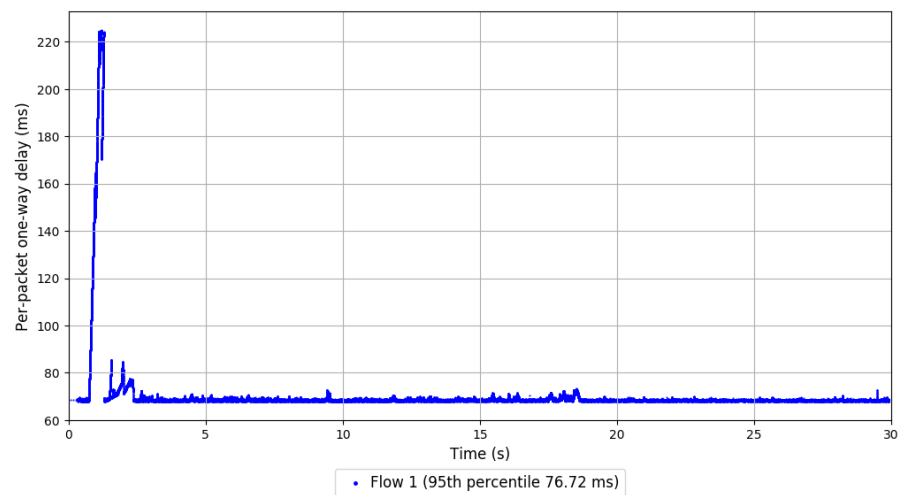Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2018-12-20 05:18:13
End at: 2018-12-20 05:18:43
Local clock offset: 9.375 ms
Remote clock offset: 54.669 ms

# Below is generated by plot.py at 2018-12-20 06:29:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 39.97 Mbit/s
95th percentile per-packet one-way delay: 67.337 ms
Loss rate: 13.77%
-- Flow 1:
Average throughput: 39.97 Mbit/s
95th percentile per-packet one-way delay: 67.337 ms
Loss rate: 13.77%
```

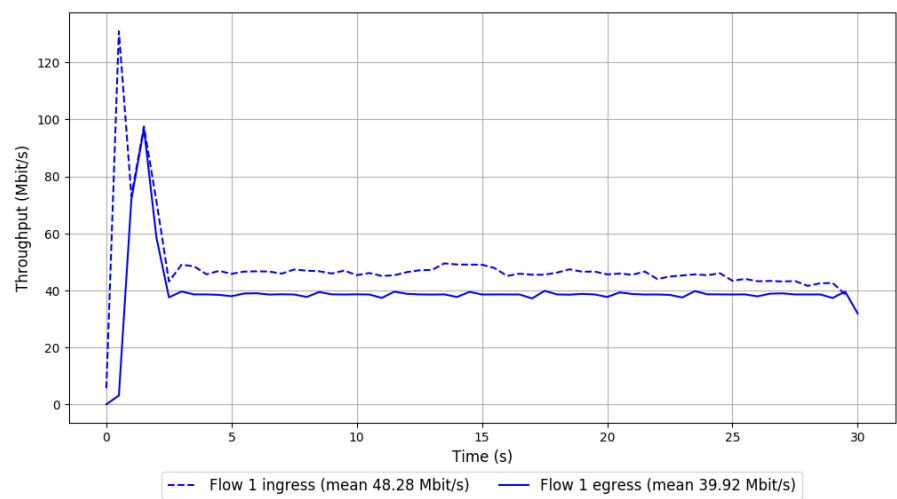Run 2: Report of FillP — Data Link

```
Run 3: Statistics of FillP

Start at: 2018-12-20 05:40:21
End at: 2018-12-20 05:40:51
Local clock offset: 10.649 ms
Remote clock offset: 54.065 ms


# Below is generated by plot.py at 2018-12-20 06:29:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 39.92 Mbit/s
95th percentile per-packet one-way delay: 102.783 ms
Loss rate: 19.07%
-- Flow 1:
Average throughput: 39.92 Mbit/s
95th percentile per-packet one-way delay: 102.783 ms
Loss rate: 19.07%
```
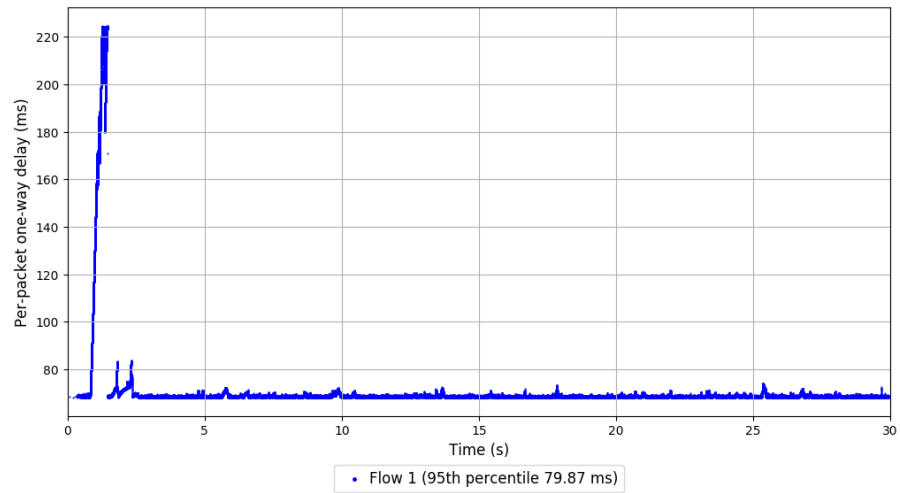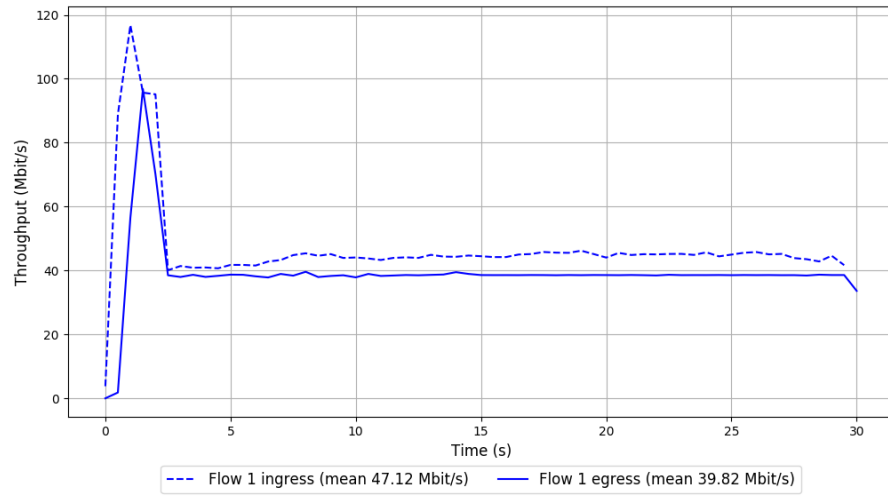
Run 3: Report of FillP — Data Link

```
Run 4: Statistics of FillP

Start at: 2018-12-20 06:02:33
End at: 2018-12-20 06:03:03
Local clock offset: 11.196 ms
Remote clock offset: 54.215 ms


# Below is generated by plot.py at 2018-12-20 06:29:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 39.92 Mbit/s
95th percentile per-packet one-way delay: 76.722 ms
Loss rate: 17.61%
-- Flow 1:
Average throughput: 39.92 Mbit/s
95th percentile per-packet one-way delay: 76.722 ms
Loss rate: 17.61%
```
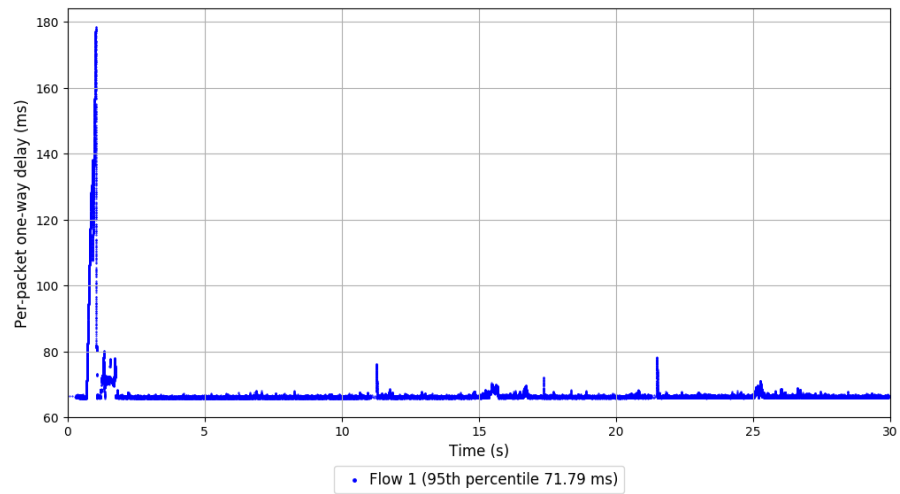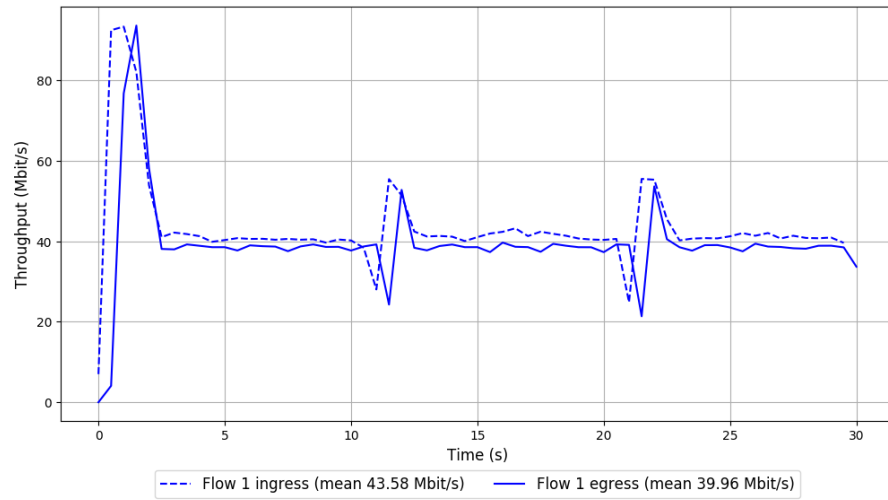
Run 4: Report of FillP — Data Link

Flow 1 ingress (mean 48.28 Mbit/s)   —— Flow 1 egress (mean 39.92 Mbit/s)

• Flow 1 (95th percentile 76.72 ms)

```
Run 5: Statistics of FillP

Start at: 2018-12-20 06:24:53
End at: 2018-12-20 06:25:23
Local clock offset: 8.946 ms
Remote clock offset: 46.074 ms


# Below is generated by plot.py at 2018-12-20 06:29:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 39.82 Mbit/s
95th percentile per-packet one-way delay: 79.867 ms
Loss rate: 15.80%
-- Flow 1:
Average throughput: 39.82 Mbit/s
95th percentile per-packet one-way delay: 79.867 ms
Loss rate: 15.80%
```

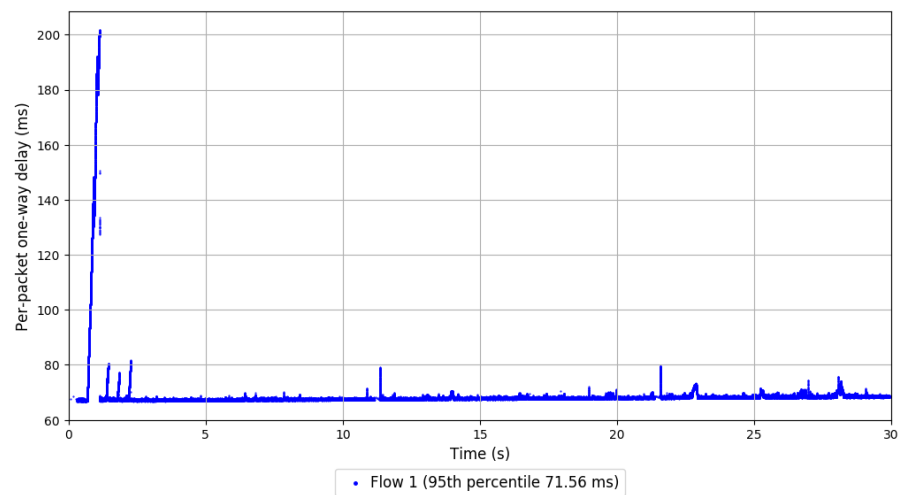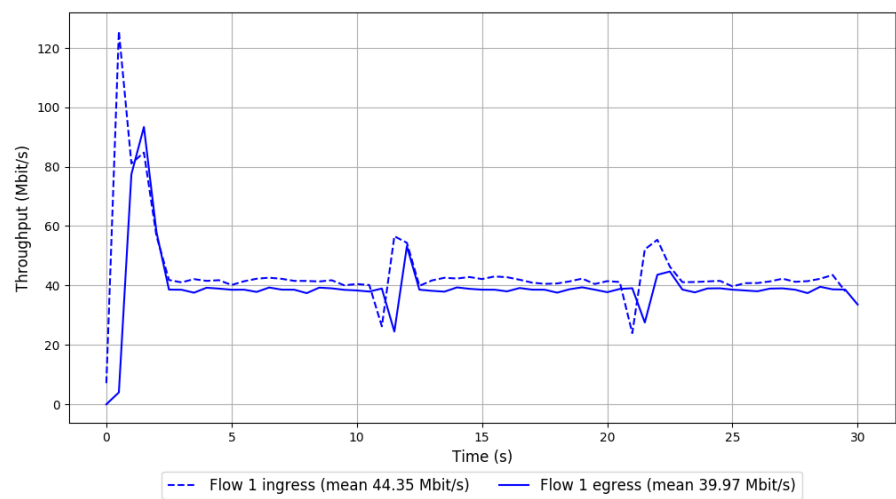# Run 5: Report of FillP — Data Link

```
Run 1: Statistics of FillP-Sheep

Start at: 2018-12-20 04:40:40
End at: 2018-12-20 04:41:10
Local clock offset: 8.872 ms
Remote clock offset: 6.176 ms


# Below is generated by plot.py at 2018-12-20 06:29:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 39.96 Mbit/s
95th percentile per-packet one-way delay: 71.793 ms
Loss rate: 8.61%
-- Flow 1:
Average throughput: 39.96 Mbit/s
95th percentile per-packet one-way delay: 71.793 ms
Loss rate: 8.61%
```
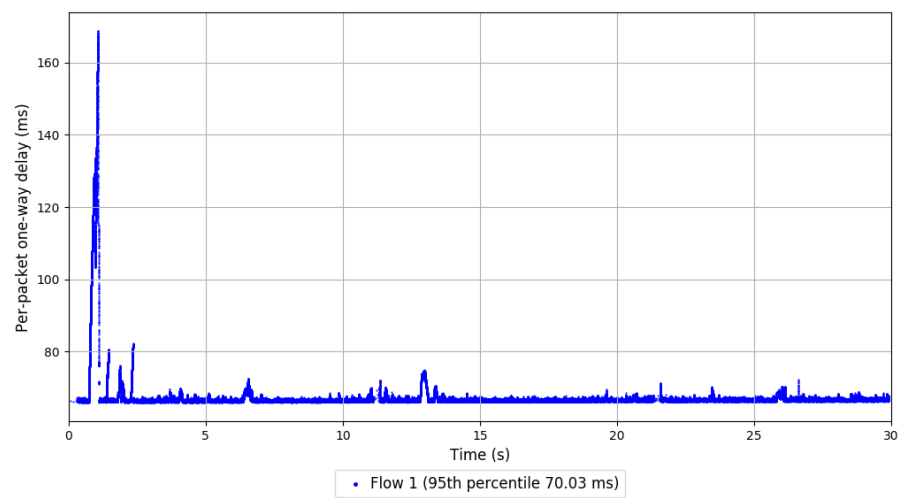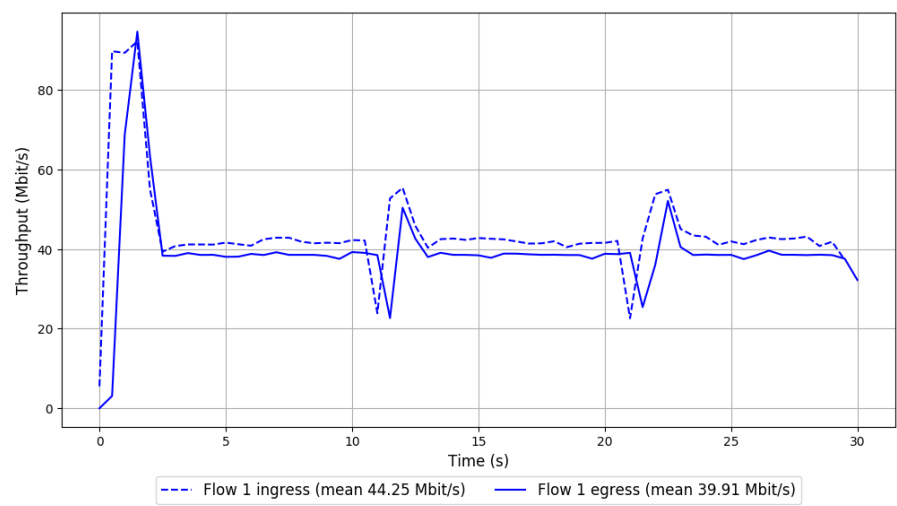
Run 1: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 43.58 Mbit/s) --- Flow 1 egress (mean 39.96 Mbit/s)

Flow 1 (95th percentile 71.79 ms)

```
Run 2: Statistics of FillP-Sheep

Start at: 2018-12-20 05:03:03
End at: 2018-12-20 05:03:33
Local clock offset: 7.618 ms
Remote clock offset: 28.842 ms


# Below is generated by plot.py at 2018-12-20 06:30:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 39.97 Mbit/s
95th percentile per-packet one-way delay: 71.558 ms
Loss rate: 10.18%
-- Flow 1:
Average throughput: 39.97 Mbit/s
95th percentile per-packet one-way delay: 71.558 ms
Loss rate: 10.18%
```
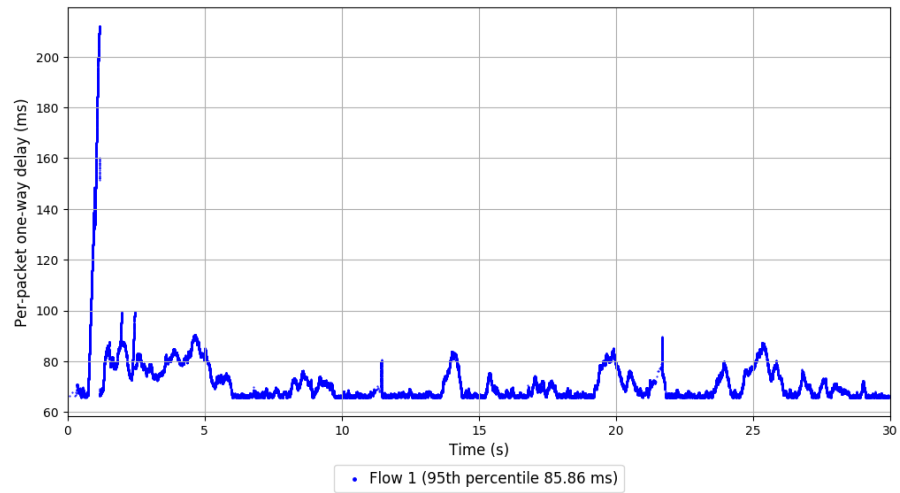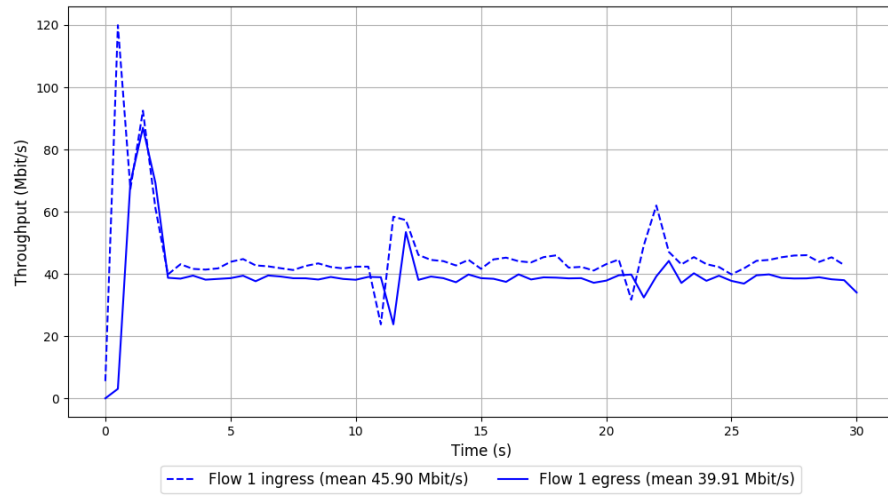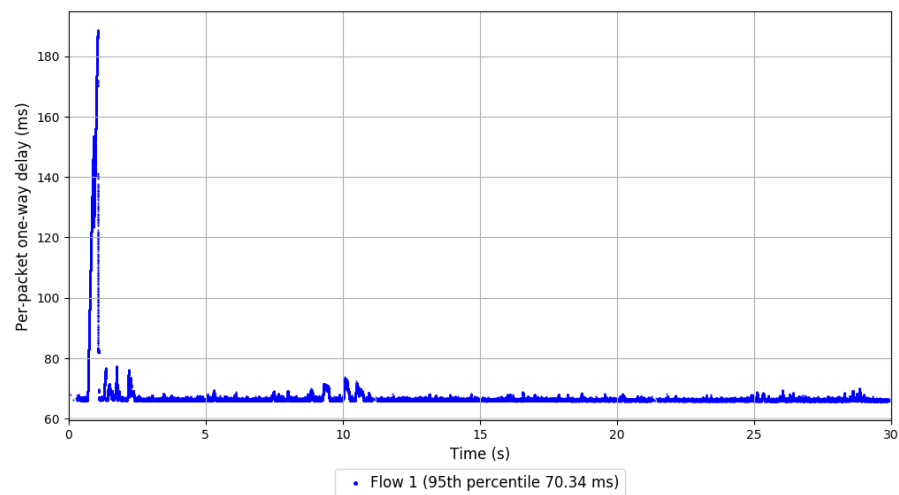
Run 2: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 44.35 Mbit/s) --- Flow 1 egress (mean 39.97 Mbit/s)
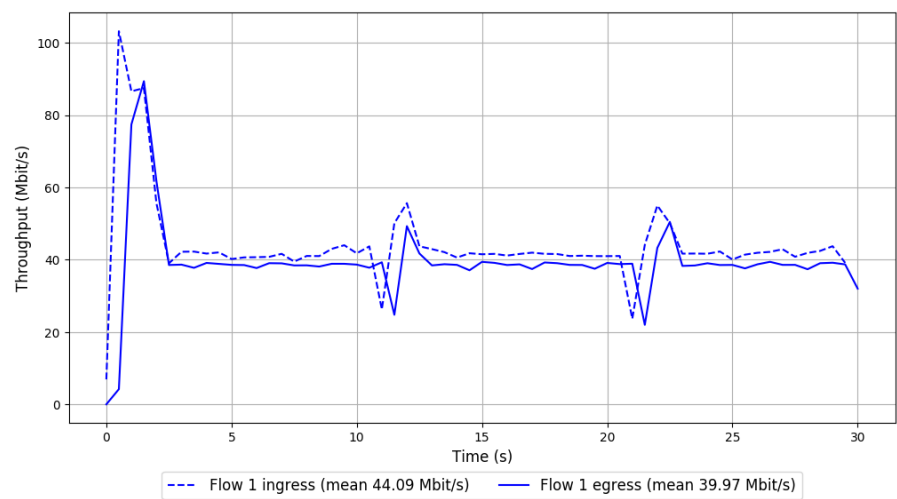

Flow 1 (95th percentile 71.56 ms)

```
Run 3: Statistics of FillP-Sheep

Start at: 2018-12-20 05:25:15
End at: 2018-12-20 05:25:45
Local clock offset: 9.751 ms
Remote clock offset: 59.879 ms


# Below is generated by plot.py at 2018-12-20 06:30:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 39.91 Mbit/s
95th percentile per-packet one-way delay: 70.030 ms
Loss rate: 10.11%
-- Flow 1:
Average throughput: 39.91 Mbit/s
95th percentile per-packet one-way delay: 70.030 ms
Loss rate: 10.11%
```

Run 3: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 44.25 Mbit/s) ---- Flow 1 egress (mean 39.91 Mbit/s)

• Flow 1 (95th percentile 70.03 ms)

```
Run 4: Statistics of FillP-Sheep

Start at: 2018-12-20 05:47:22
End at: 2018-12-20 05:47:52
Local clock offset: 10.568 ms
Remote clock offset: 55.098 ms


# Below is generated by plot.py at 2018-12-20 06:30:10
# Datalink statistics
-- Total of 1 flow:
Average throughput: 39.91 Mbit/s
95th percentile per-packet one-way delay: 85.865 ms
Loss rate: 13.36%
-- Flow 1:
Average throughput: 39.91 Mbit/s
95th percentile per-packet one-way delay: 85.865 ms
Loss rate: 13.36%
```

Run 4: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 45.90 Mbit/s)   Flow 1 egress (mean 39.91 Mbit/s)

Flow 1 (95th percentile 85.86 ms)

```
Run 5: Statistics of FillP-Sheep

Start at: 2018-12-20 06:09:35
End at: 2018-12-20 06:10:05
Local clock offset: 10.249 ms
Remote clock offset: 53.189 ms


# Below is generated by plot.py at 2018-12-20 06:30:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 39.97 Mbit/s
95th percentile per-packet one-way delay: 70.345 ms
Loss rate: 9.65%
-- Flow 1:
Average throughput: 39.97 Mbit/s
95th percentile per-packet one-way delay: 70.345 ms
Loss rate: 9.65%
```
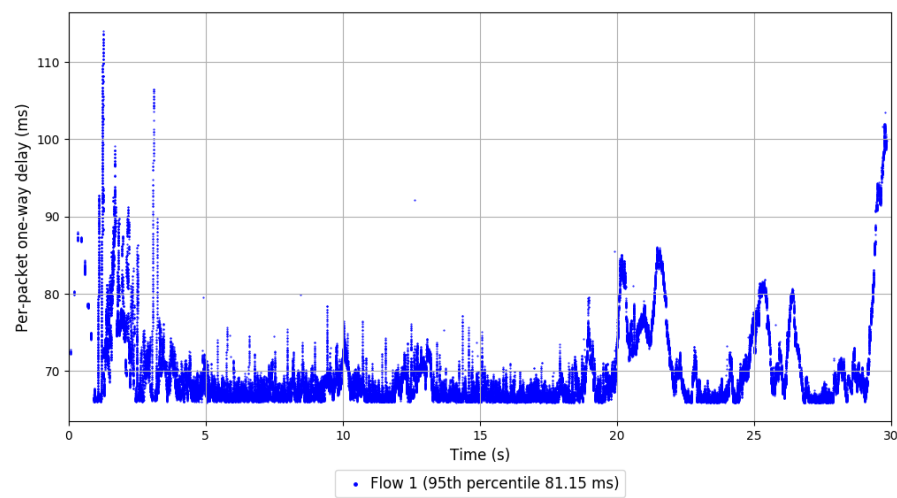
Run 5: Report of FillP-Sheep — Data Link

```
Run 1: Statistics of Indigo

Start at: 2018-12-20 04:58:23
End at: 2018-12-20 04:58:53
Local clock offset: 7.642 ms
Remote clock offset: 11.409 ms
```

Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-12-20 05:20:32
End at: 2018-12-20 05:21:02
Local clock offset: 9.66 ms
Remote clock offset: 56.757 ms


# Below is generated by plot.py at 2018-12-20 06:30:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 35.94 Mbit/s
95th percentile per-packet one-way delay: 72.631 ms
Loss rate: 32.84%
-- Flow 1:
Average throughput: 35.94 Mbit/s
95th percentile per-packet one-way delay: 72.631 ms
Loss rate: 32.84%
```
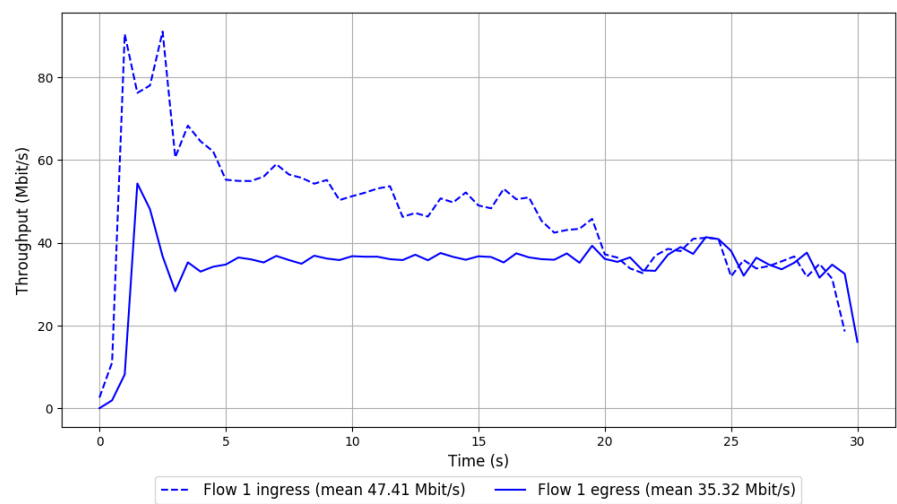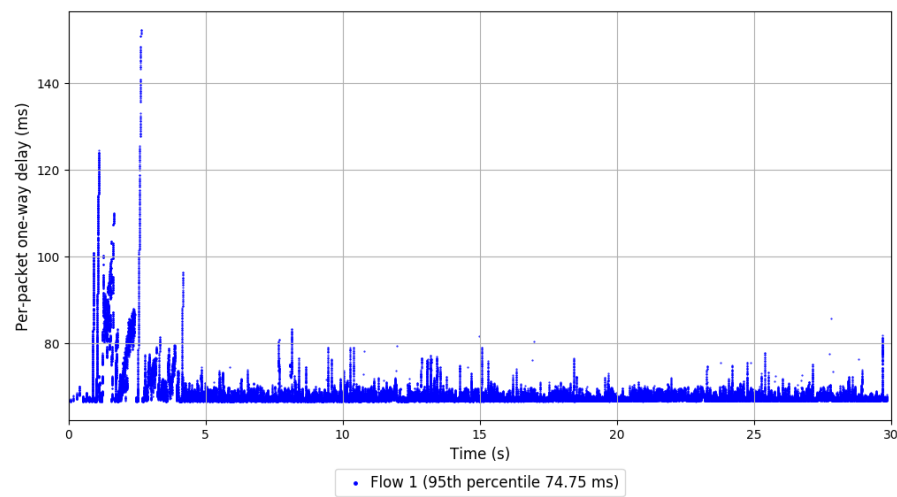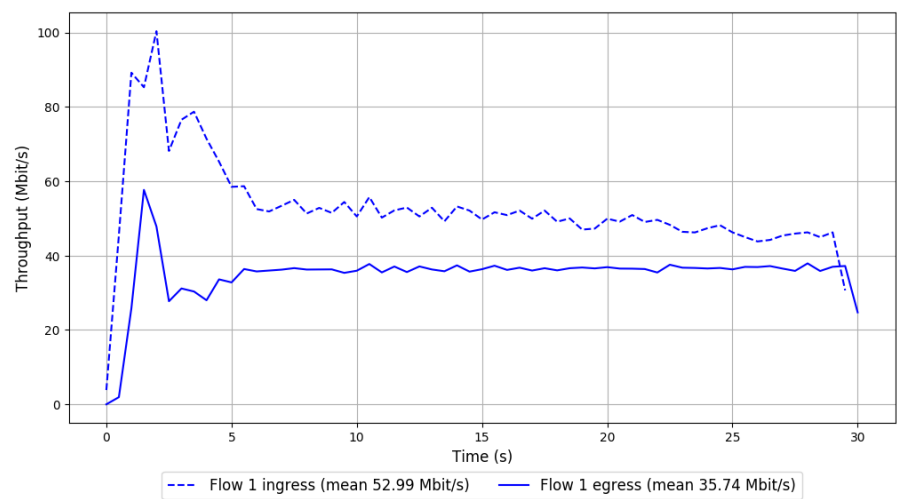
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-12-20 05:42:40
End at: 2018-12-20 05:43:10
Local clock offset: 10.673 ms
Remote clock offset: 56.05 ms


# Below is generated by plot.py at 2018-12-20 06:30:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 35.32 Mbit/s
95th percentile per-packet one-way delay: 81.149 ms
Loss rate: 25.78%
-- Flow 1:
Average throughput: 35.32 Mbit/s
95th percentile per-packet one-way delay: 81.149 ms
Loss rate: 25.78%
```
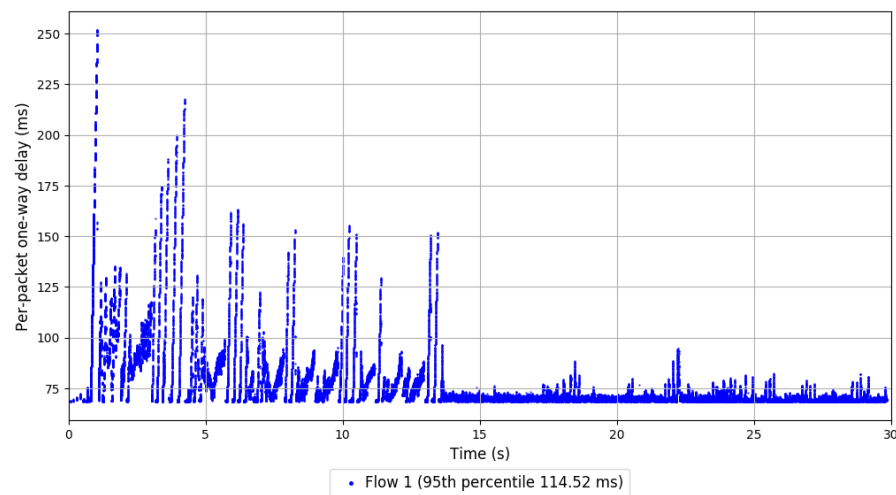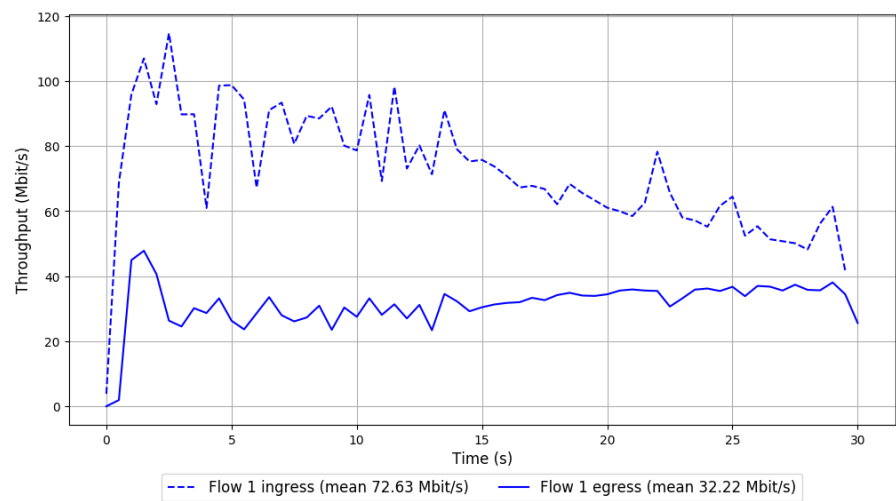
Run 3: Report of Indigo — Data Link

Flow 1 ingress (mean 47.41 Mbit/s)   Flow 1 egress (mean 35.32 Mbit/s)

Flow 1 (95th percentile 81.15 ms)

```
Run 4: Statistics of Indigo

Start at: 2018-12-20 06:04:52
End at: 2018-12-20 06:05:22
Local clock offset: 10.661 ms
Remote clock offset: 55.503 ms


# Below is generated by plot.py at 2018-12-20 06:30:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 35.74 Mbit/s
95th percentile per-packet one-way delay: 74.755 ms
Loss rate: 32.77%
-- Flow 1:
Average throughput: 35.74 Mbit/s
95th percentile per-packet one-way delay: 74.755 ms
Loss rate: 32.77%
```
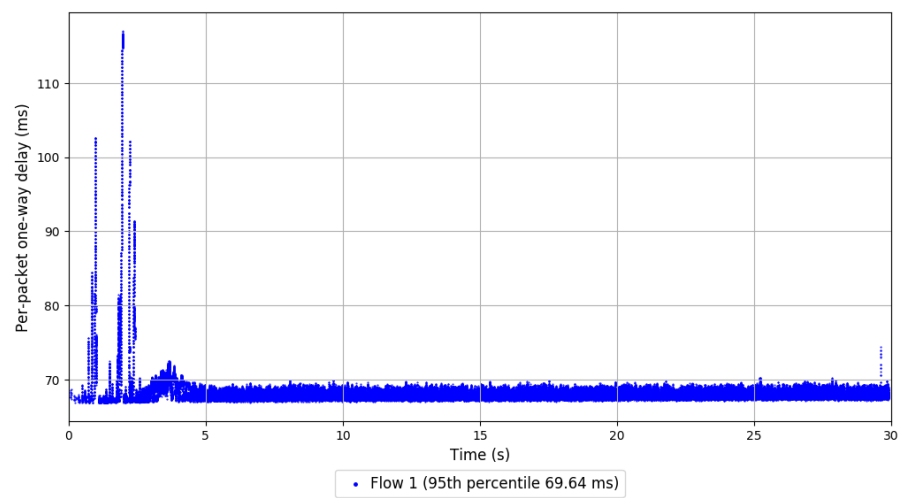
Run 4: Report of Indigo — Data Link

```
Run 5: Statistics of Indigo

Start at: 2018-12-20 06:27:12
End at: 2018-12-20 06:27:42
Local clock offset: 9.021 ms
Remote clock offset: 46.397 ms


# Below is generated by plot.py at 2018-12-20 06:30:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 32.22 Mbit/s
95th percentile per-packet one-way delay: 114.519 ms
Loss rate: 55.81%
-- Flow 1:
Average throughput: 32.22 Mbit/s
95th percentile per-packet one-way delay: 114.519 ms
Loss rate: 55.81%
```
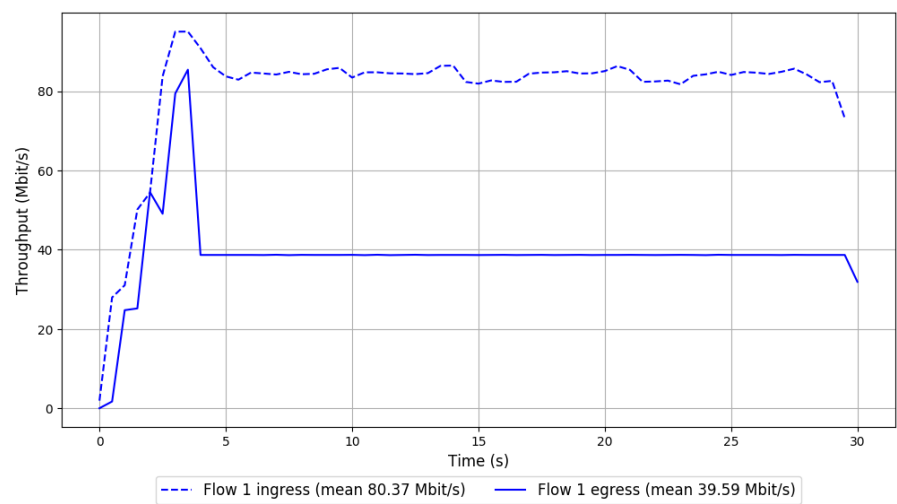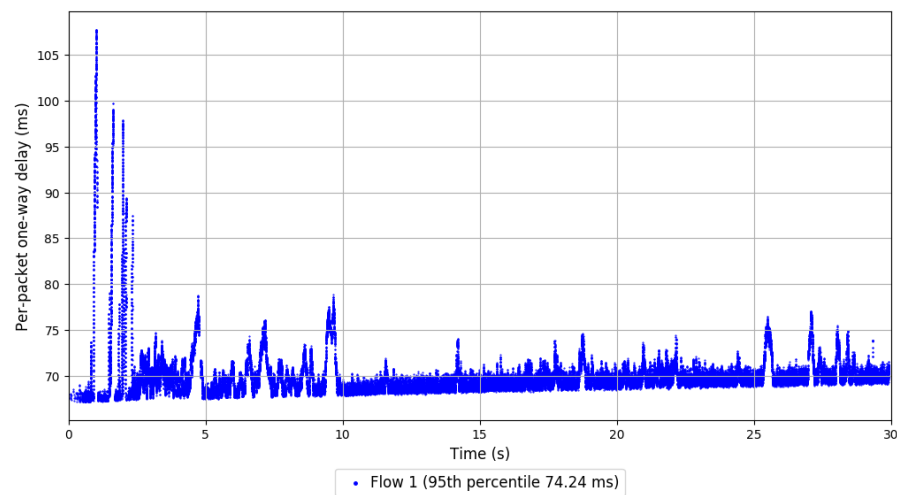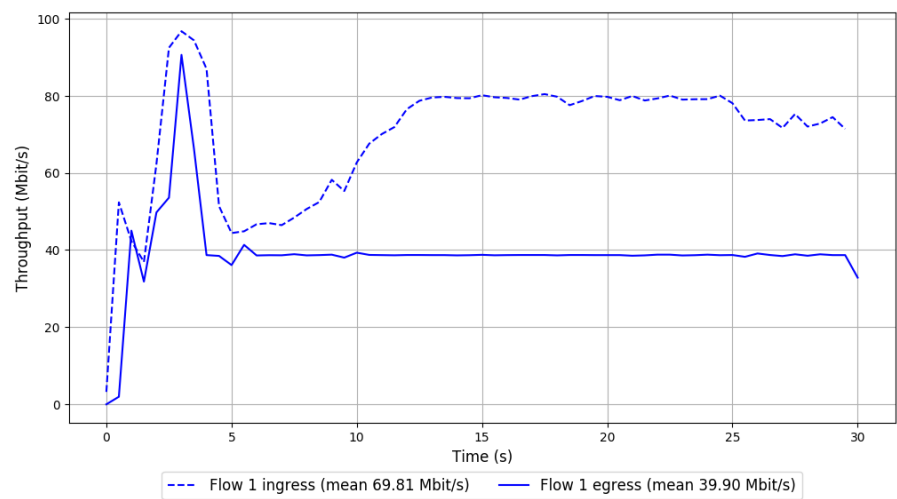
Run 5: Report of Indigo — Data Link

```
Run 1: Statistics of Indigo-MusesD

Start at: 2018-12-20 04:38:10
End at: 2018-12-20 04:38:40
Local clock offset: 9.483 ms
Remote clock offset: 4.914 ms


# Below is generated by plot.py at 2018-12-20 06:30:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 39.59 Mbit/s
95th percentile per-packet one-way delay: 69.642 ms
Loss rate: 50.91%
-- Flow 1:
Average throughput: 39.59 Mbit/s
95th percentile per-packet one-way delay: 69.642 ms
Loss rate: 50.91%
```
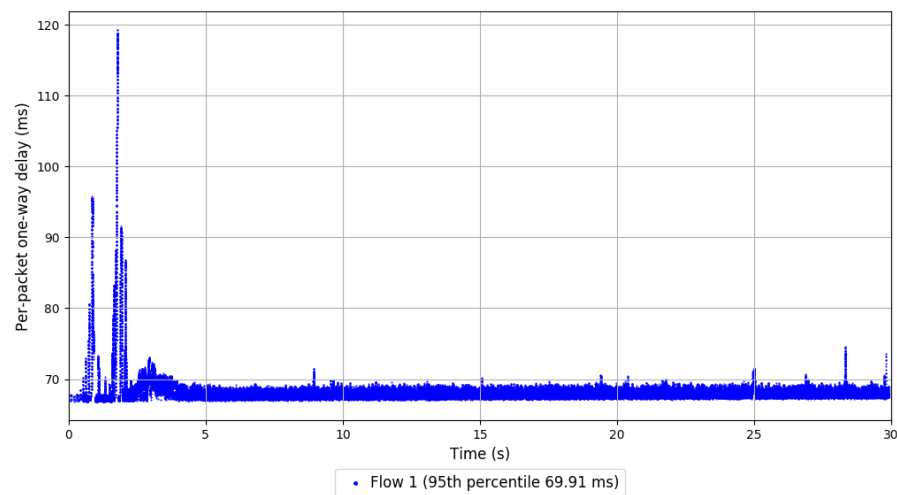
Run 1: Report of Indigo-MusesD — Data Link

Flow 1 ingress (mean 80.37 Mbit/s) ----- Flow 1 egress (mean 39.59 Mbit/s) ———

Flow 1 (95th percentile 69.64 ms)

66

```
Run 2: Statistics of Indigo-MusesD

Start at: 2018-12-20 05:00:41
End at: 2018-12-20 05:01:11
Local clock offset: 7.198 ms
Remote clock offset: 20.125 ms


# Below is generated by plot.py at 2018-12-20 06:30:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 39.90 Mbit/s
95th percentile per-packet one-way delay: 74.241 ms
Loss rate: 43.04%
-- Flow 1:
Average throughput: 39.90 Mbit/s
95th percentile per-packet one-way delay: 74.241 ms
Loss rate: 43.04%
```
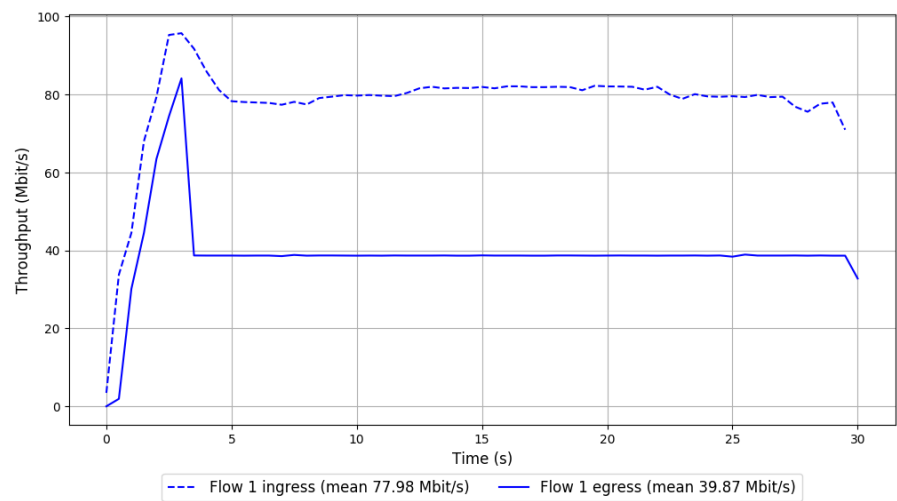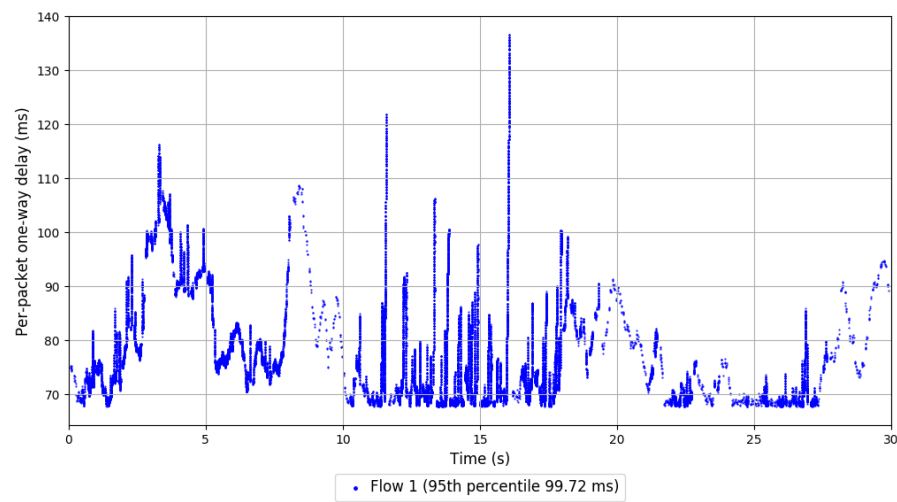
Run 2: Report of Indigo-MusesD — Data Link

```
Run 3: Statistics of Indigo-MusesD

Start at: 2018-12-20 05:22:53
End at: 2018-12-20 05:23:23
Local clock offset: 10.199 ms
Remote clock offset: 57.722 ms


# Below is generated by plot.py at 2018-12-20 06:30:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 39.87 Mbit/s
95th percentile per-packet one-way delay: 69.907 ms
Loss rate: 49.04%
-- Flow 1:
Average throughput: 39.87 Mbit/s
95th percentile per-packet one-way delay: 69.907 ms
Loss rate: 49.04%
```
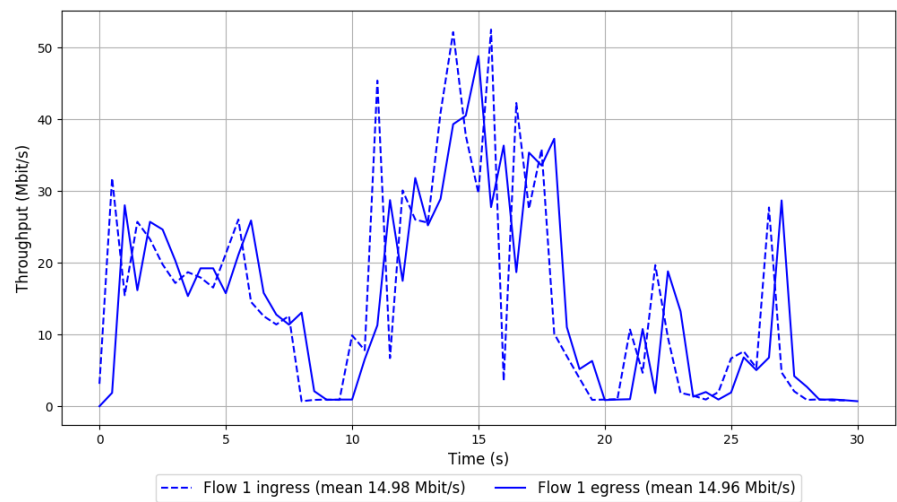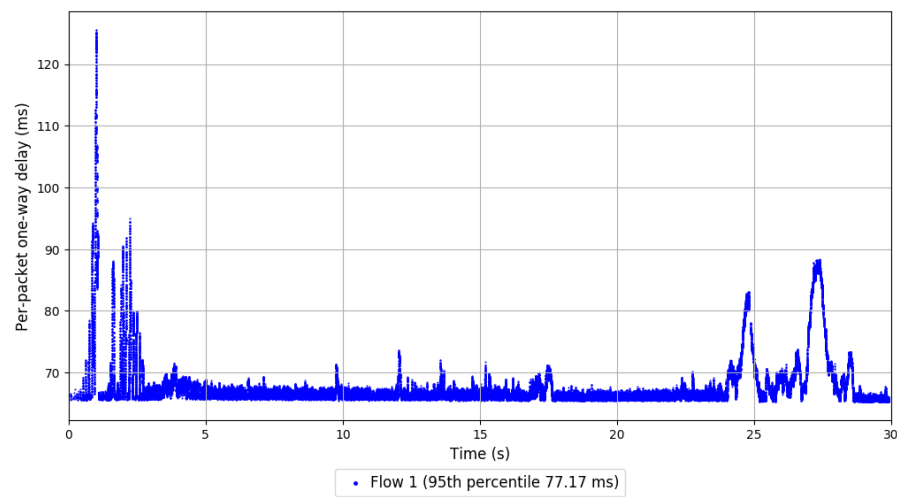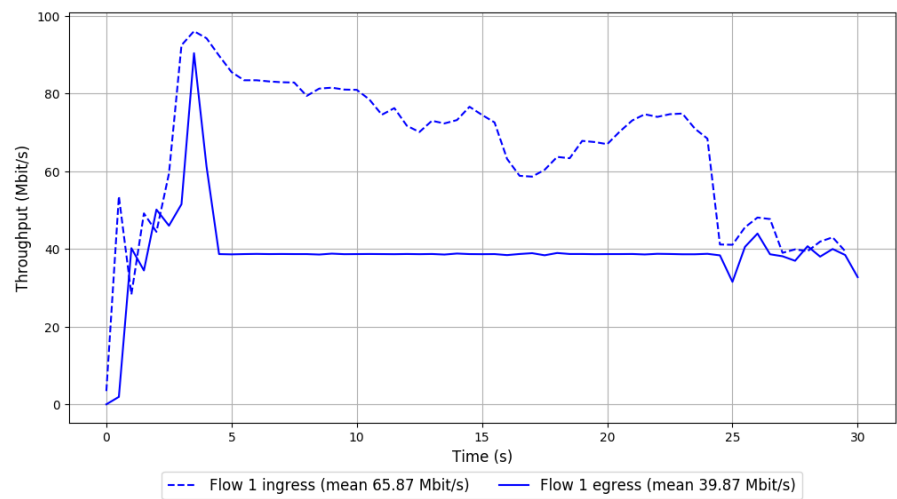
Run 3: Report of Indigo-MusesD — Data Link

Flow 1 ingress (mean 77.98 Mbit/s)   Flow 1 egress (mean 39.87 Mbit/s)

Flow 1 (95th percentile 69.91 ms)

```
Run 4: Statistics of Indigo-MusesD

Start at: 2018-12-20 05:45:02
End at: 2018-12-20 05:45:32
Local clock offset: 10.878 ms
Remote clock offset: 53.831 ms


# Below is generated by plot.py at 2018-12-20 06:30:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 14.96 Mbit/s
95th percentile per-packet one-way delay: 99.717 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 14.96 Mbit/s
95th percentile per-packet one-way delay: 99.717 ms
Loss rate: 0.53%
```
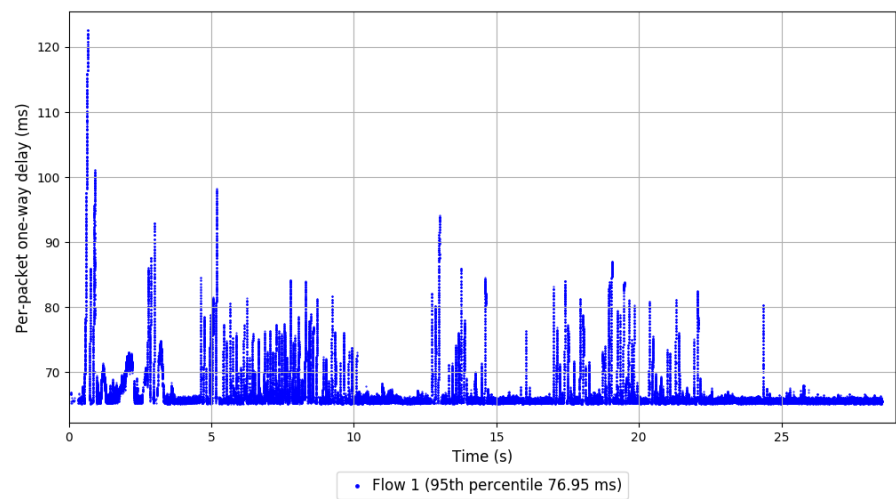
Run 4: Report of Indigo-MusesD — Data Link

```
Run 5: Statistics of Indigo-MusesD

Start at: 2018-12-20 06:07:13
End at: 2018-12-20 06:07:43
Local clock offset: 10.437 ms
Remote clock offset: 55.044 ms


# Below is generated by plot.py at 2018-12-20 06:30:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 39.87 Mbit/s
95th percentile per-packet one-way delay: 77.168 ms
Loss rate: 39.68%
-- Flow 1:
Average throughput: 39.87 Mbit/s
95th percentile per-packet one-way delay: 77.168 ms
Loss rate: 39.68%
```
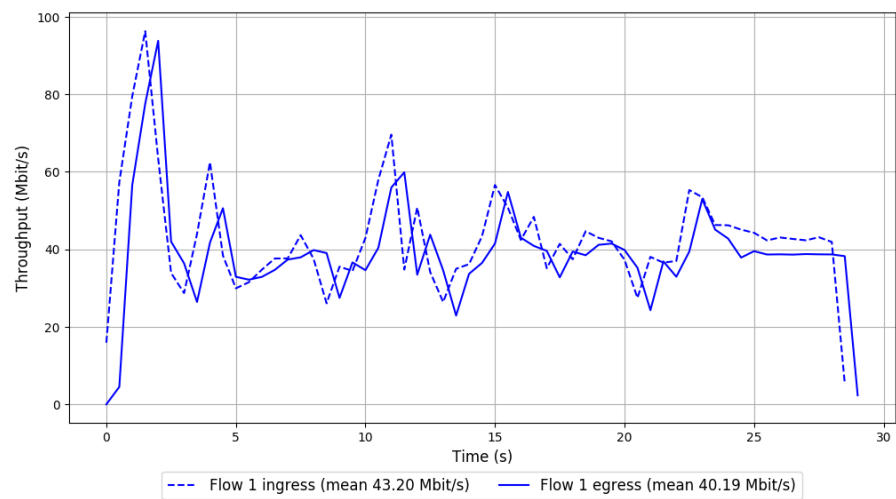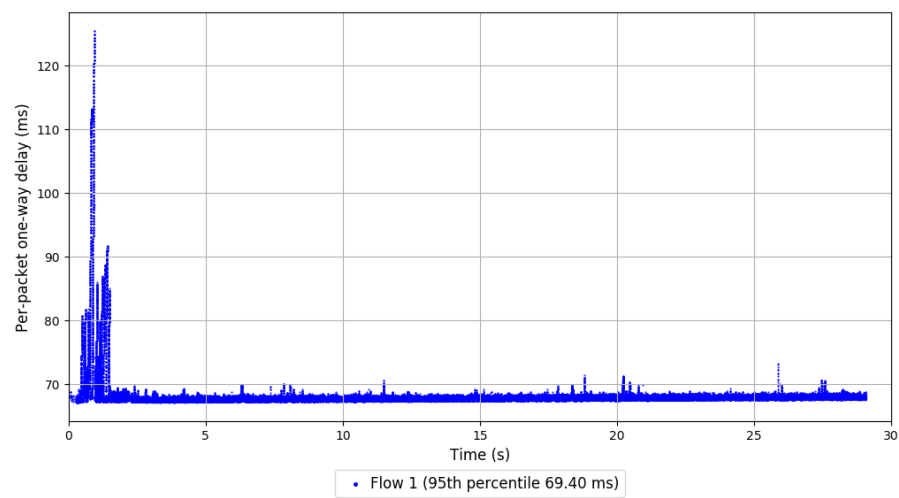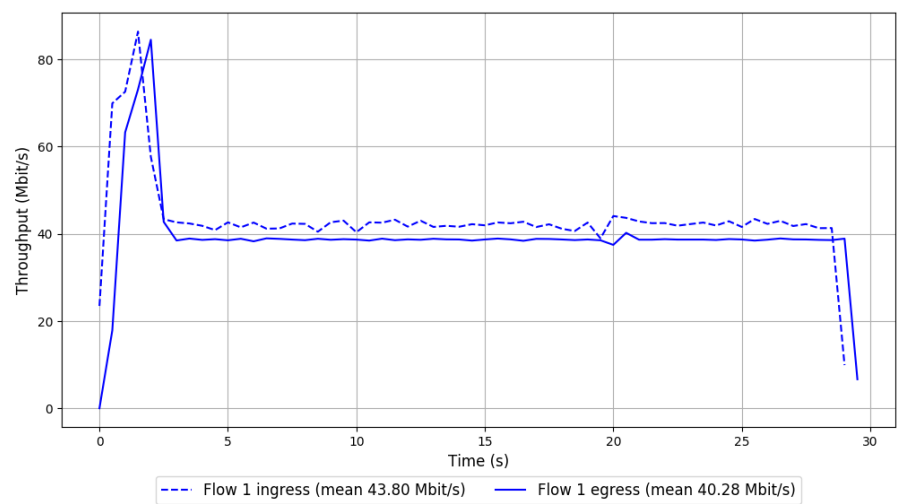
Run 5: Report of Indigo-MusesD — Data Link

```
Run 1: Statistics of Indigo-MusesT

Start at: 2018-12-20 04:52:18
End at: 2018-12-20 04:52:48
Local clock offset: 7.374 ms
Remote clock offset: 7.421 ms


# Below is generated by plot.py at 2018-12-20 06:30:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 40.19 Mbit/s
95th percentile per-packet one-way delay: 76.946 ms
Loss rate: 7.31%
-- Flow 1:
Average throughput: 40.19 Mbit/s
95th percentile per-packet one-way delay: 76.946 ms
Loss rate: 7.31%
```
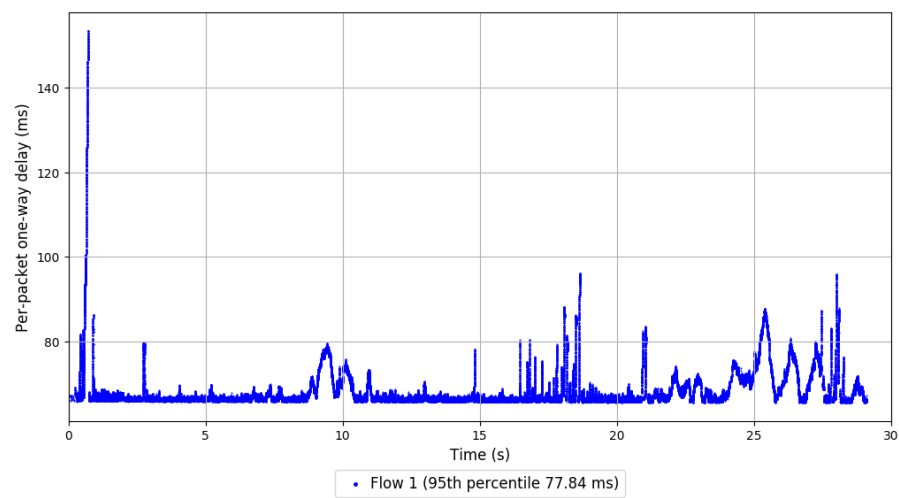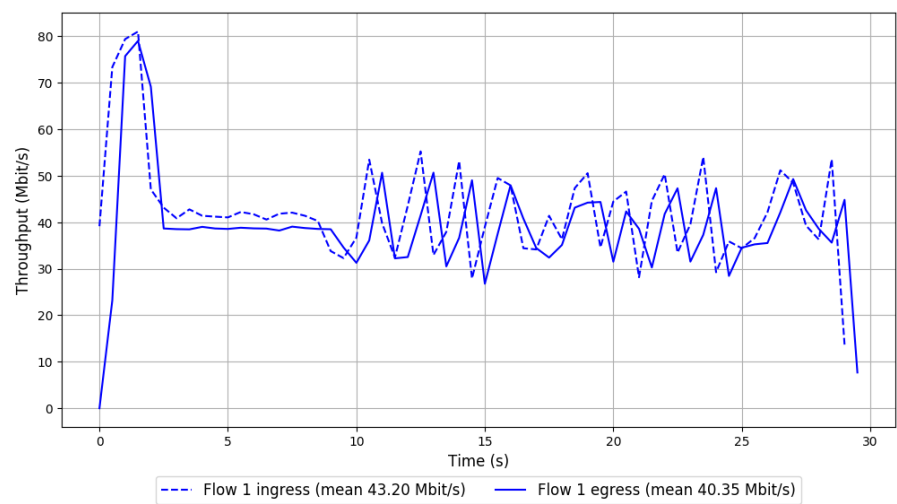
Run 1: Report of Indigo-MusesT — Data Link

```
Run 2: Statistics of Indigo-MusesT

Start at: 2018-12-20 05:14:40
End at: 2018-12-20 05:15:10
Local clock offset: 9.469 ms
Remote clock offset: 50.218 ms


# Below is generated by plot.py at 2018-12-20 06:30:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 40.28 Mbit/s
95th percentile per-packet one-way delay: 69.396 ms
Loss rate: 8.36%
-- Flow 1:
Average throughput: 40.28 Mbit/s
95th percentile per-packet one-way delay: 69.396 ms
Loss rate: 8.36%
```

Run 2: Report of Indigo-MusesT — Data Link

```
Run 3: Statistics of Indigo-MusesT

Start at: 2018-12-20 05:36:49
End at: 2018-12-20 05:37:19
Local clock offset: 10.296 ms
Remote clock offset: 58.112 ms


# Below is generated by plot.py at 2018-12-20 06:30:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 40.35 Mbit/s
95th percentile per-packet one-way delay: 77.843 ms
Loss rate: 6.91%
-- Flow 1:
Average throughput: 40.35 Mbit/s
95th percentile per-packet one-way delay: 77.843 ms
Loss rate: 6.91%
```
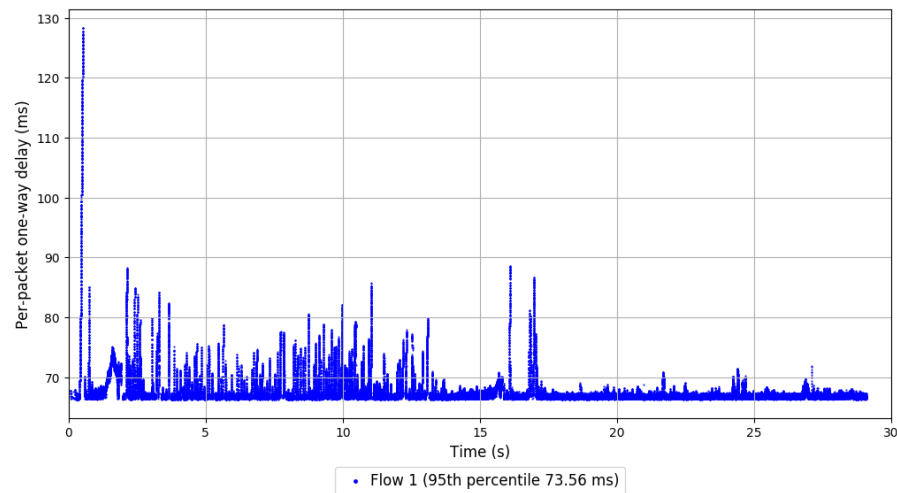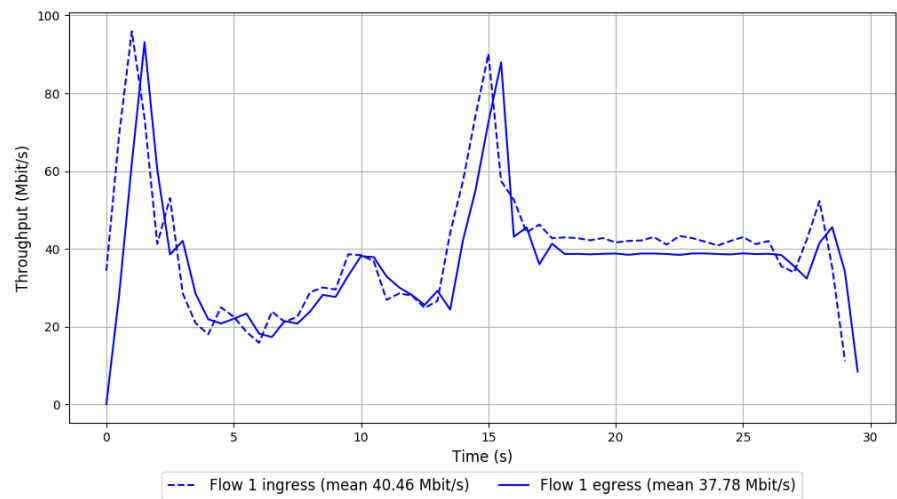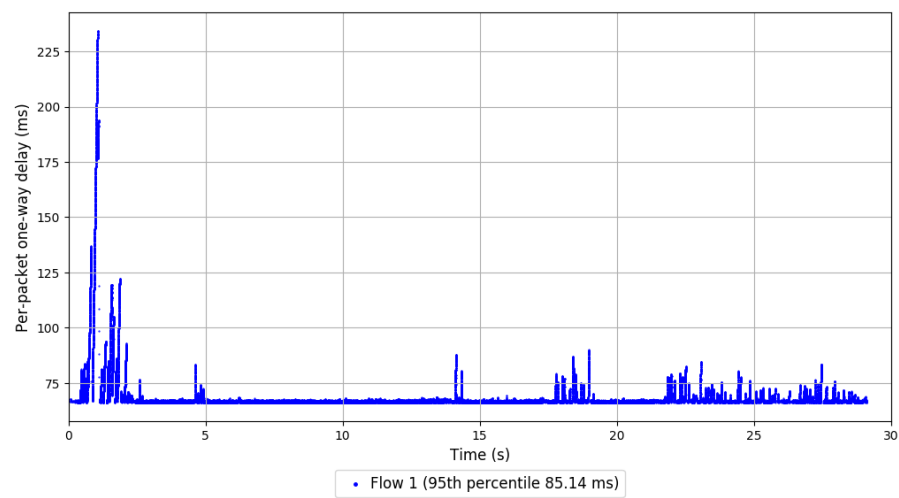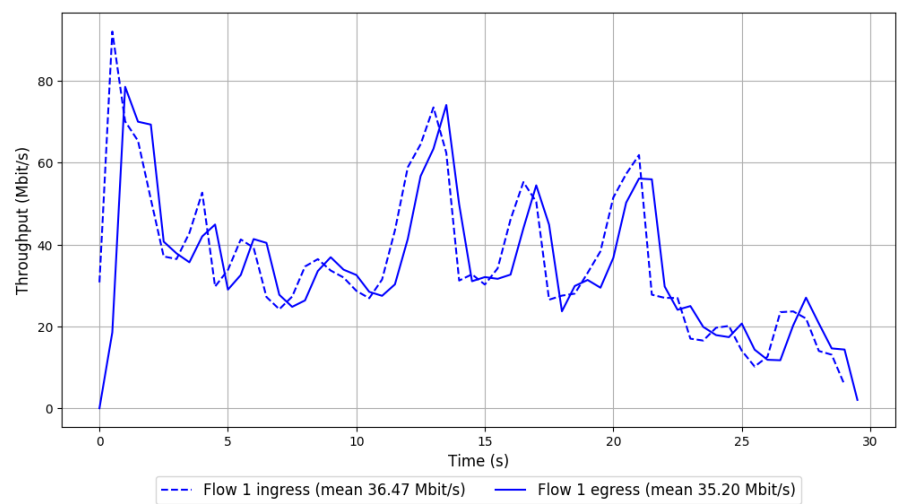
Run 3: Report of Indigo-MusesT — Data Link

Flow 1 ingress (mean 43.20 Mbit/s)   Flow 1 egress (mean 40.35 Mbit/s)

Flow 1 (95th percentile 77.84 ms)

```
Run 4: Statistics of Indigo-MusesT

Start at: 2018-12-20 05:58:57
End at: 2018-12-20 05:59:28
Local clock offset: 10.786 ms
Remote clock offset: 54.91 ms


# Below is generated by plot.py at 2018-12-20 06:31:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 37.78 Mbit/s
95th percentile per-packet one-way delay: 73.555 ms
Loss rate: 6.96%
-- Flow 1:
Average throughput: 37.78 Mbit/s
95th percentile per-packet one-way delay: 73.555 ms
Loss rate: 6.96%
```
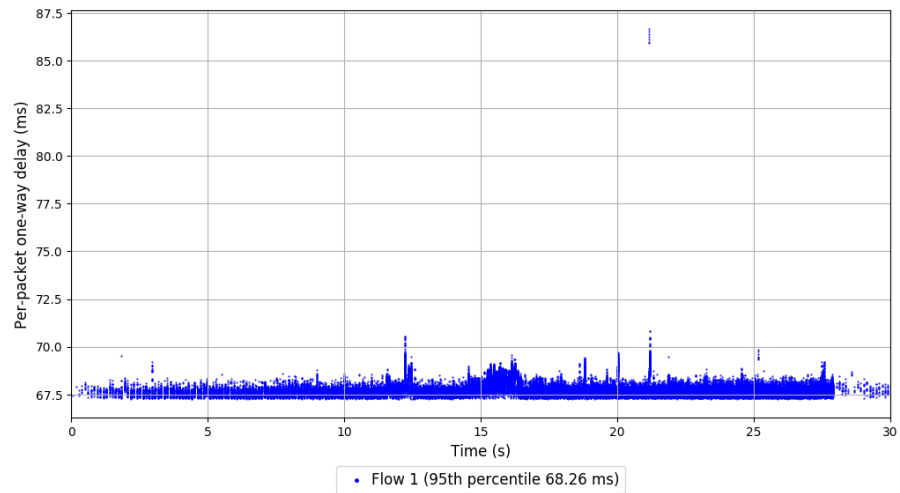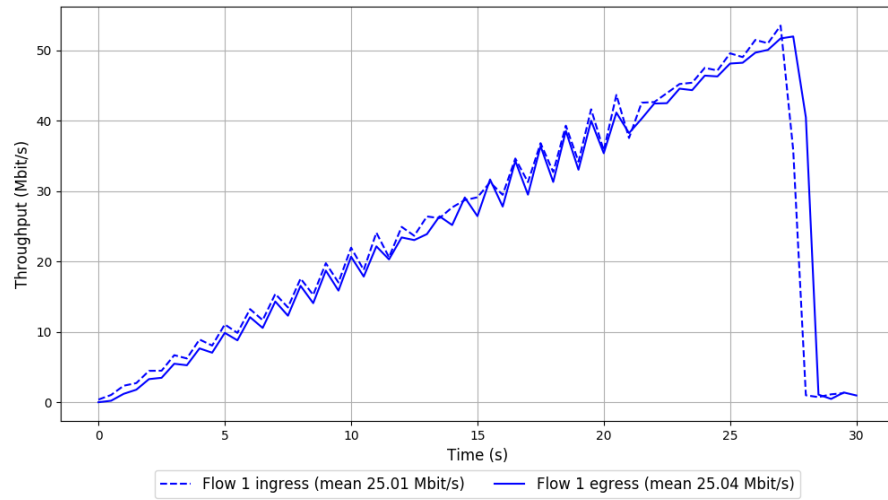
Run 4: Report of Indigo-MusesT — Data Link

```
Run 5: Statistics of Indigo-MusesT

Start at: 2018-12-20 06:21:21
End at: 2018-12-20 06:21:51
Local clock offset: 9.896 ms
Remote clock offset: 49.721 ms


# Below is generated by plot.py at 2018-12-20 06:31:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 35.20 Mbit/s
95th percentile per-packet one-way delay: 85.139 ms
Loss rate: 3.85%
-- Flow 1:
Average throughput: 35.20 Mbit/s
95th percentile per-packet one-way delay: 85.139 ms
Loss rate: 3.85%
```
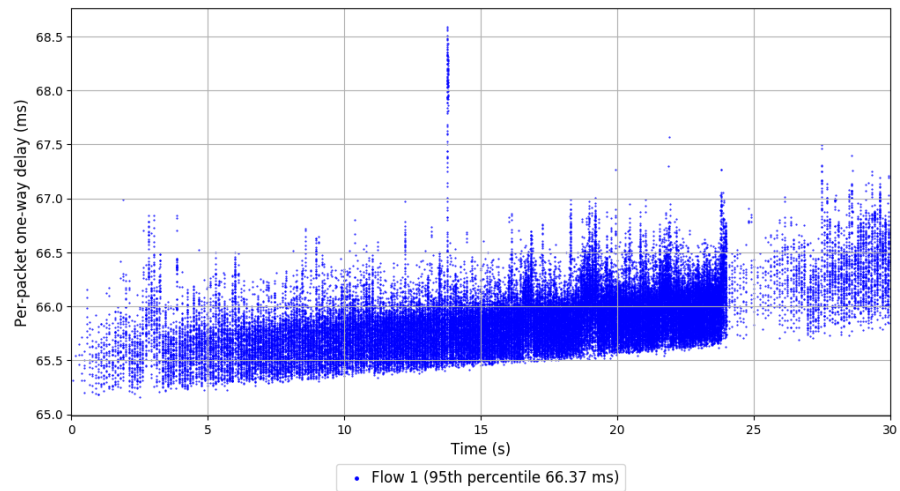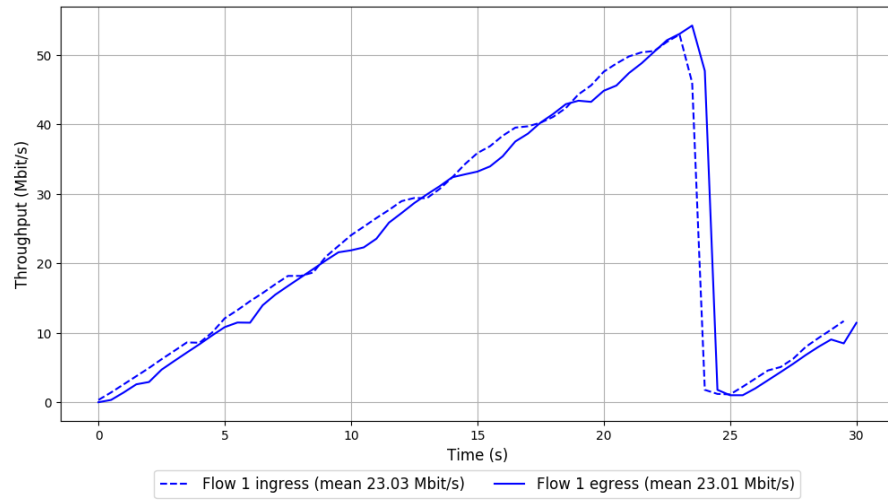
Run 5: Report of Indigo-MusesT — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2018-12-20 04:48:48
End at: 2018-12-20 04:49:18
Local clock offset: 8.122 ms
Remote clock offset: 6.118 ms


# Below is generated by plot.py at 2018-12-20 06:31:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 25.04 Mbit/s
95th percentile per-packet one-way delay: 68.256 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 25.04 Mbit/s
95th percentile per-packet one-way delay: 68.256 ms
Loss rate: 0.24%
```

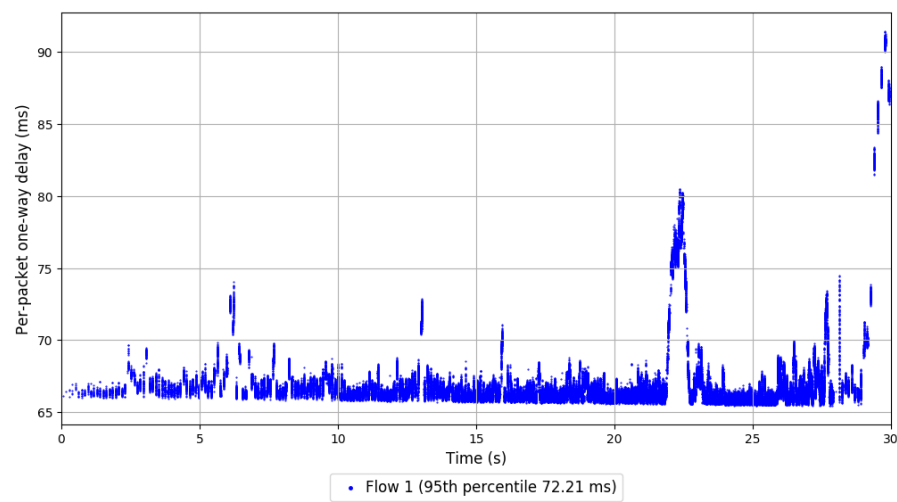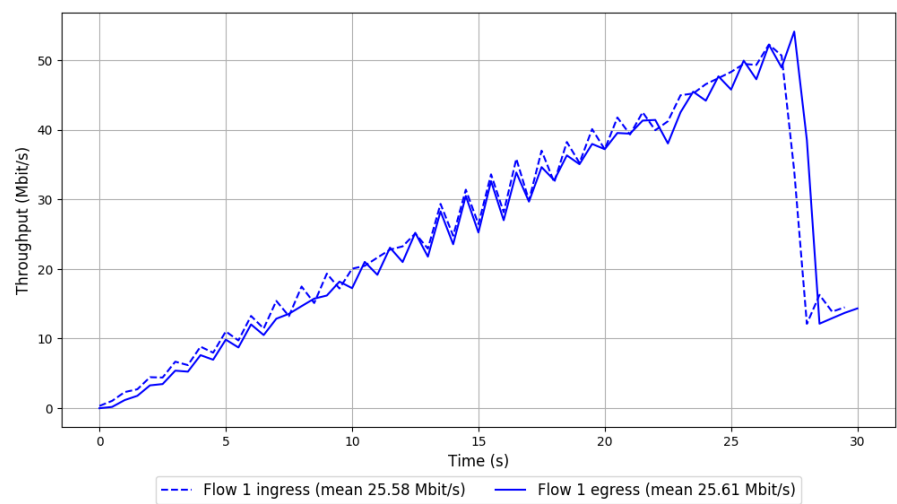Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-12-20 05:11:10
End at: 2018-12-20 05:11:40
Local clock offset: 8.5 ms
Remote clock offset: 47.229 ms


# Below is generated by plot.py at 2018-12-20 06:31:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 23.01 Mbit/s
95th percentile per-packet one-way delay: 66.373 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 23.01 Mbit/s
95th percentile per-packet one-way delay: 66.373 ms
Loss rate: 0.42%
```
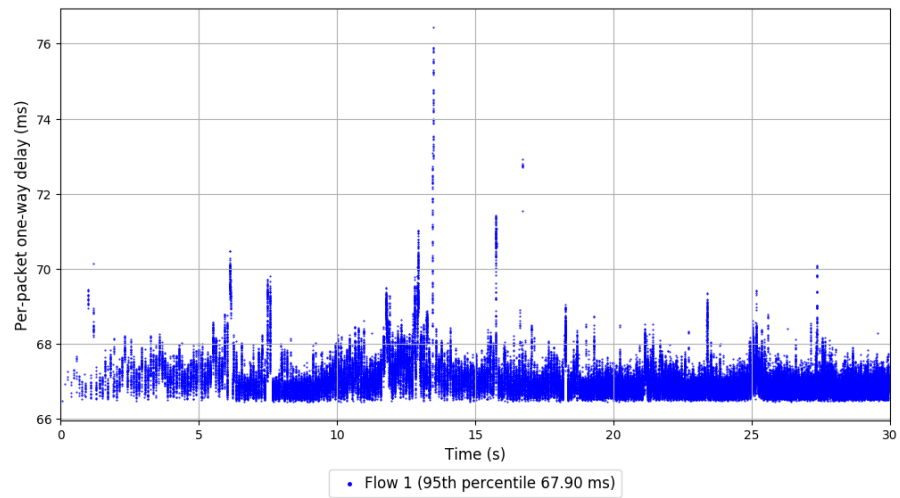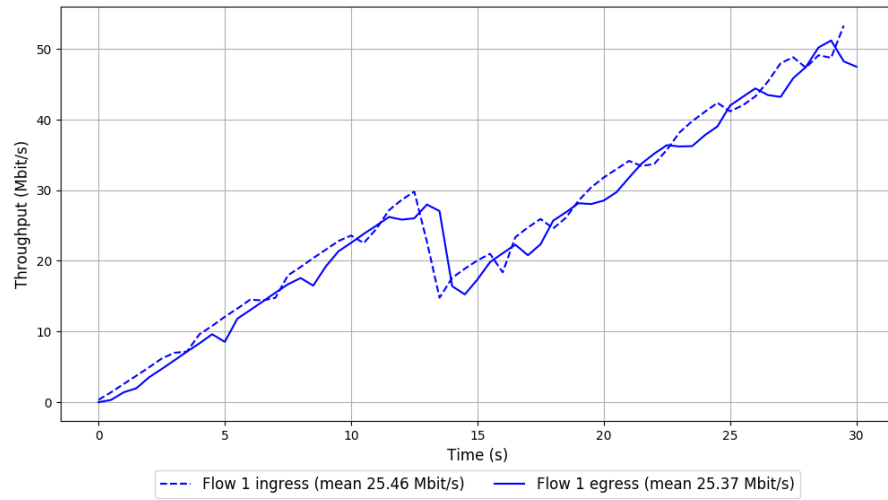
Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-12-20 05:33:19
End at: 2018-12-20 05:33:49
Local clock offset: 10.224 ms
Remote clock offset: 61.426 ms

# Below is generated by plot.py at 2018-12-20 06:31:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 25.61 Mbit/s
95th percentile per-packet one-way delay: 72.213 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 25.61 Mbit/s
95th percentile per-packet one-way delay: 72.213 ms
Loss rate: 0.24%
```

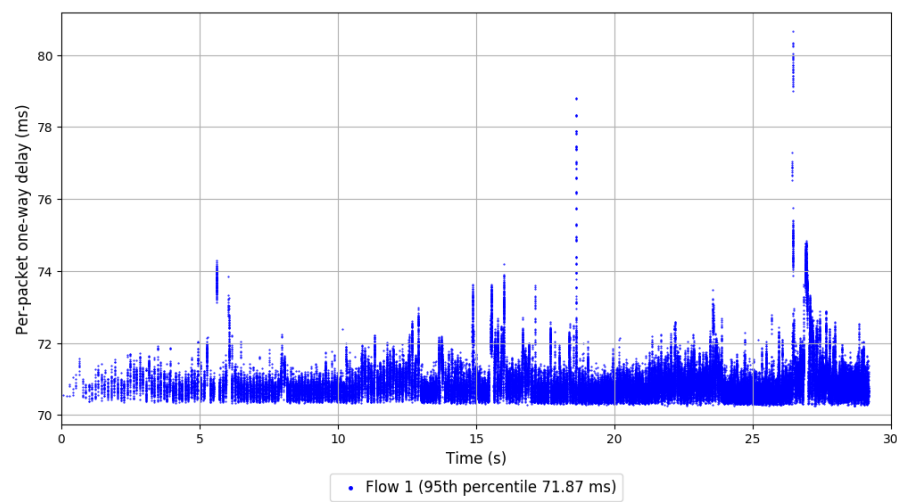Run 3: Report of LEDBAT — Data Link

```
Run 4: Statistics of LEDBAT

Start at: 2018-12-20 05:55:27
End at: 2018-12-20 05:55:57
Local clock offset: 10.503 ms
Remote clock offset: 54.493 ms


# Below is generated by plot.py at 2018-12-20 06:31:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 25.37 Mbit/s
95th percentile per-packet one-way delay: 67.901 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 25.37 Mbit/s
95th percentile per-packet one-way delay: 67.901 ms
Loss rate: 0.72%
```

Run 4: Report of LEDBAT — Data Link

Flow 1 ingress (mean 25.46 Mbit/s) ---- Flow 1 egress (mean 25.37 Mbit/s)

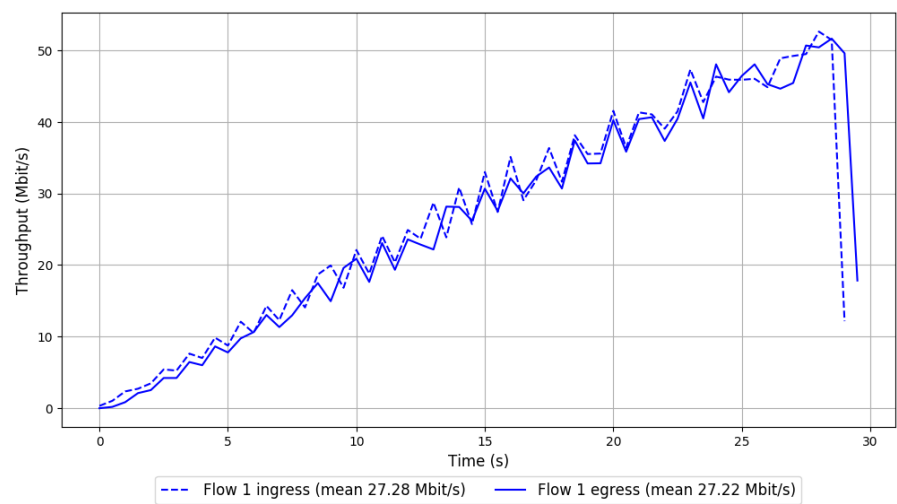• Flow 1 (95th percentile 67.90 ms)

```
Run 5: Statistics of LEDBAT

Start at: 2018-12-20 06:17:40
End at: 2018-12-20 06:18:10
Local clock offset: 9.925 ms
Remote clock offset: 46.036 ms

# Below is generated by plot.py at 2018-12-20 06:31:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 27.22 Mbit/s
95th percentile per-packet one-way delay: 71.867 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 27.22 Mbit/s
95th percentile per-packet one-way delay: 71.867 ms
Loss rate: 0.21%
```

Run 5: Report of LEDBAT — Data Link

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-12-20 04:46:30
End at: 2018-12-20 04:47:00
Local clock offset: 8.05 ms
Remote clock offset: 6.625 ms

# Below is generated by plot.py at 2018-12-20 06:31:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 37.45 Mbit/s
95th percentile per-packet one-way delay: 67.103 ms
Loss rate: 6.14%
-- Flow 1:
Average throughput: 37.45 Mbit/s
95th percentile per-packet one-way delay: 67.103 ms
Loss rate: 6.14%
```
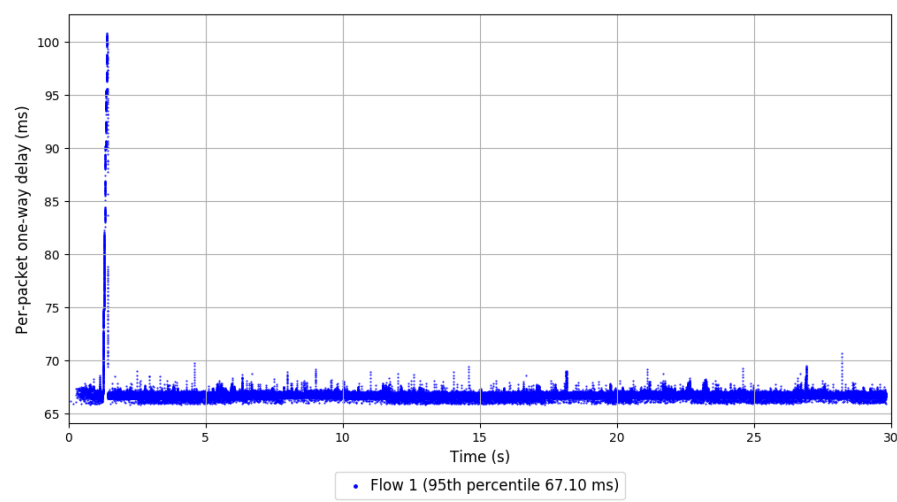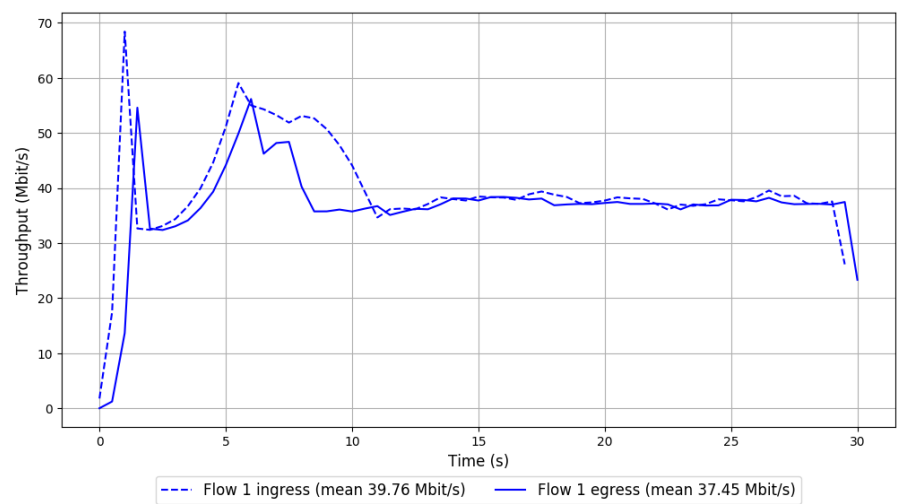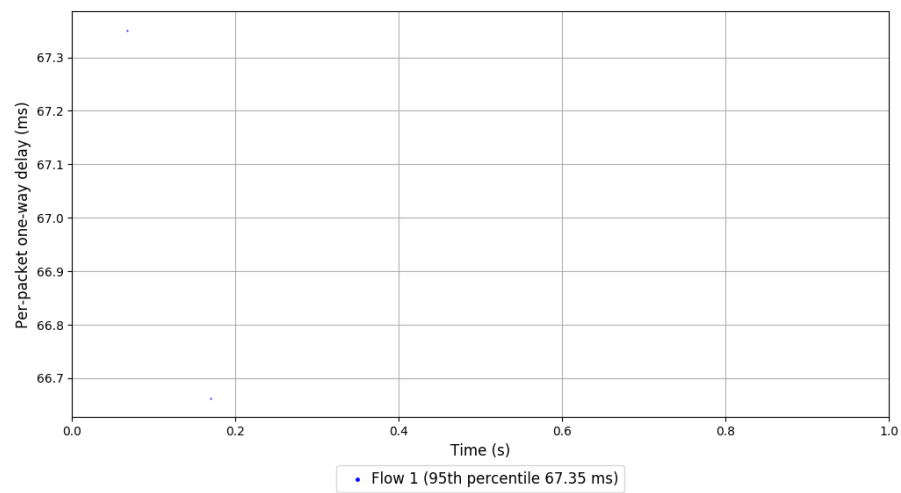
Run 1: Report of PCC-Allegro — Data Link
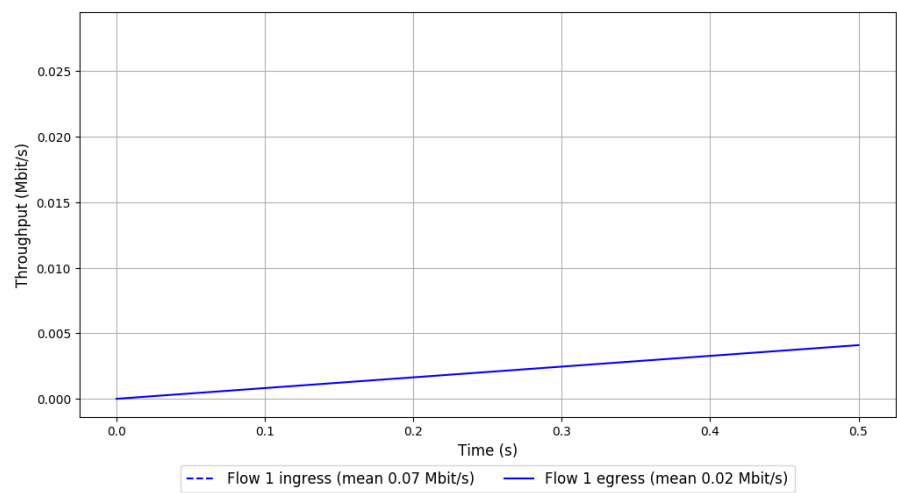
```
Run 2: Statistics of PCC-Allegro

Start at: 2018-12-20 05:08:54
End at: 2018-12-20 05:09:24
Local clock offset: 8.192 ms
Remote clock offset: 42.091 ms
```

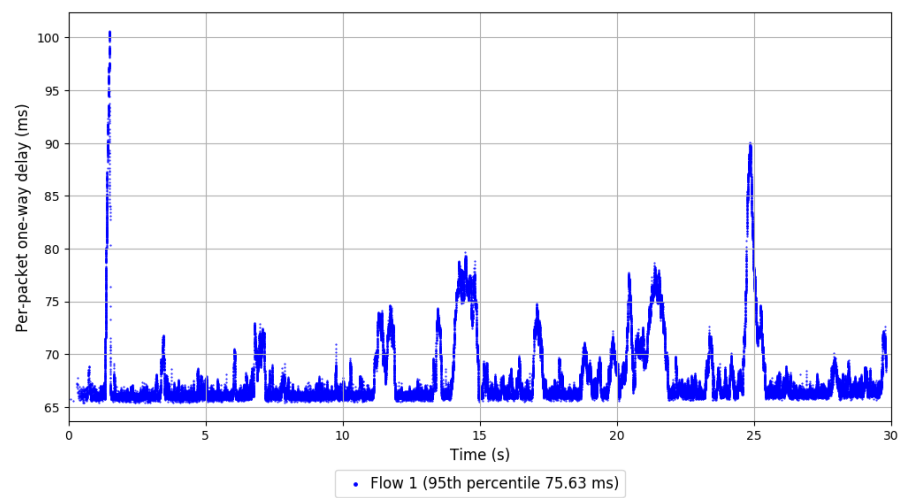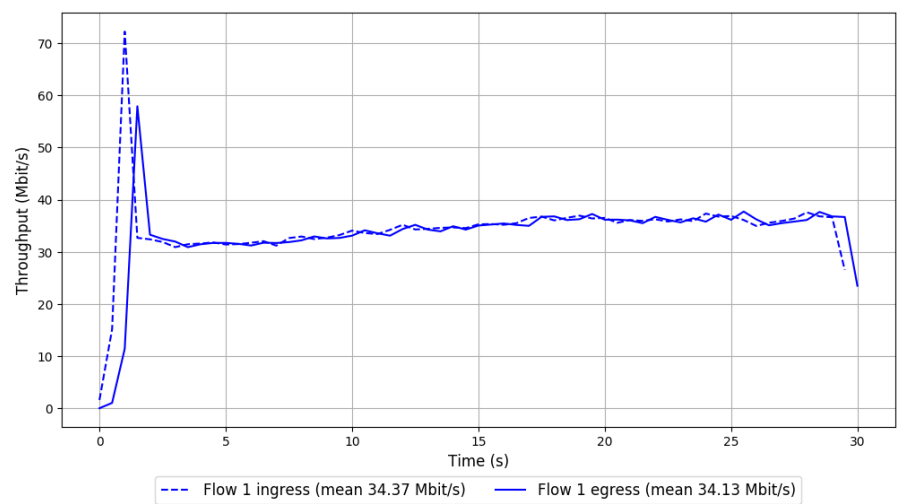Run 2: Report of PCC-Allegro — Data Link

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-12-20 05:31:01
End at: 2018-12-20 05:31:31
Local clock offset: 10.177 ms
Remote clock offset: 64.185 ms


# Below is generated by plot.py at 2018-12-20 06:31:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 34.13 Mbit/s
95th percentile per-packet one-way delay: 75.633 ms
Loss rate: 1.05%
-- Flow 1:
Average throughput: 34.13 Mbit/s
95th percentile per-packet one-way delay: 75.633 ms
Loss rate: 1.05%
```

Run 3: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 34.37 Mbit/s)   Flow 1 egress (mean 34.13 Mbit/s)
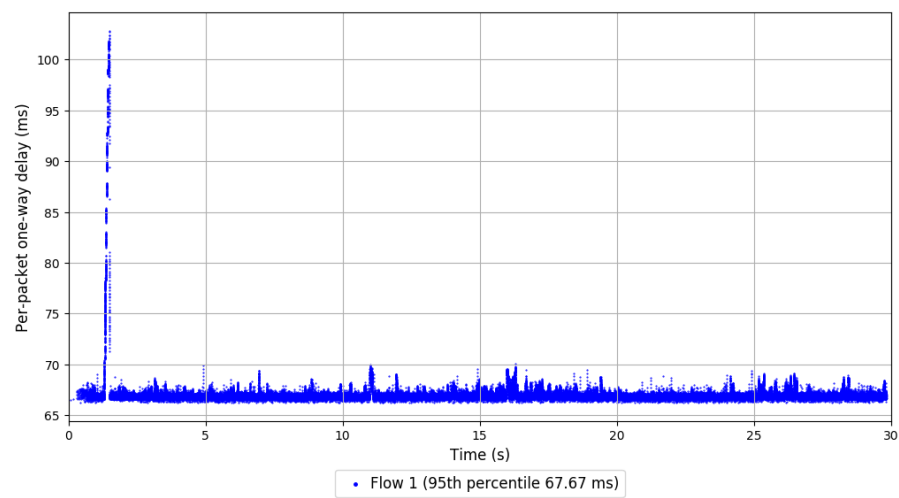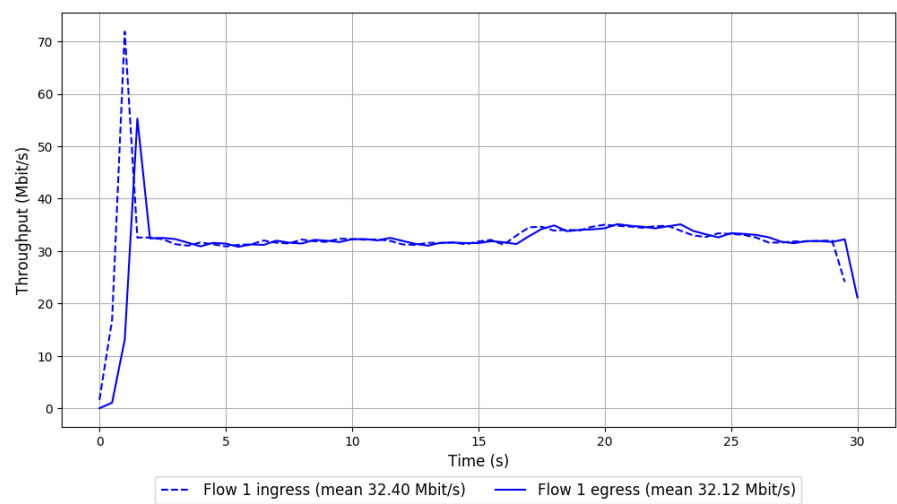

Flow 1 (95th percentile 75.63 ms)

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-12-20 05:53:10
End at: 2018-12-20 05:53:40
Local clock offset: 10.398 ms
Remote clock offset: 54.203 ms


# Below is generated by plot.py at 2018-12-20 06:31:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 32.12 Mbit/s
95th percentile per-packet one-way delay: 67.675 ms
Loss rate: 1.24%
-- Flow 1:
Average throughput: 32.12 Mbit/s
95th percentile per-packet one-way delay: 67.675 ms
Loss rate: 1.24%
```
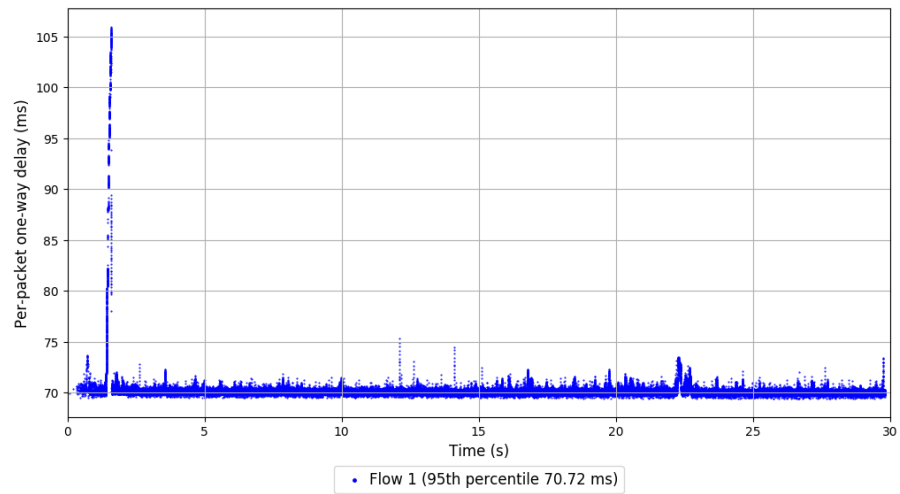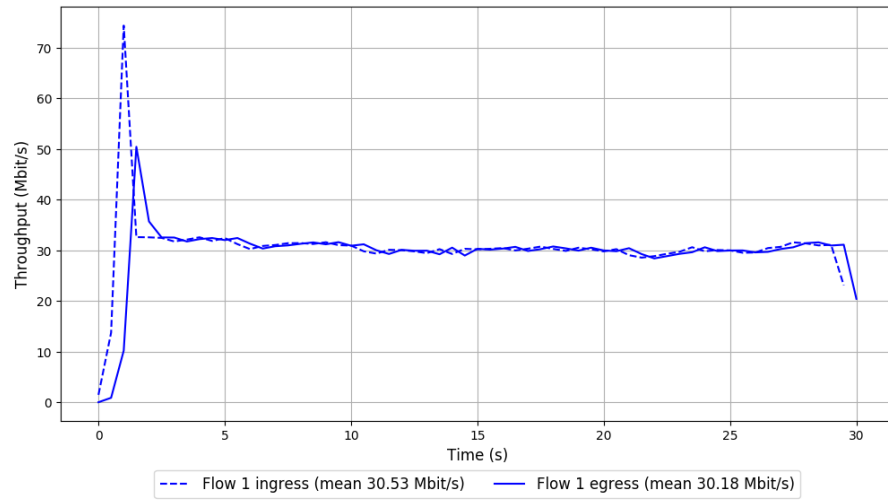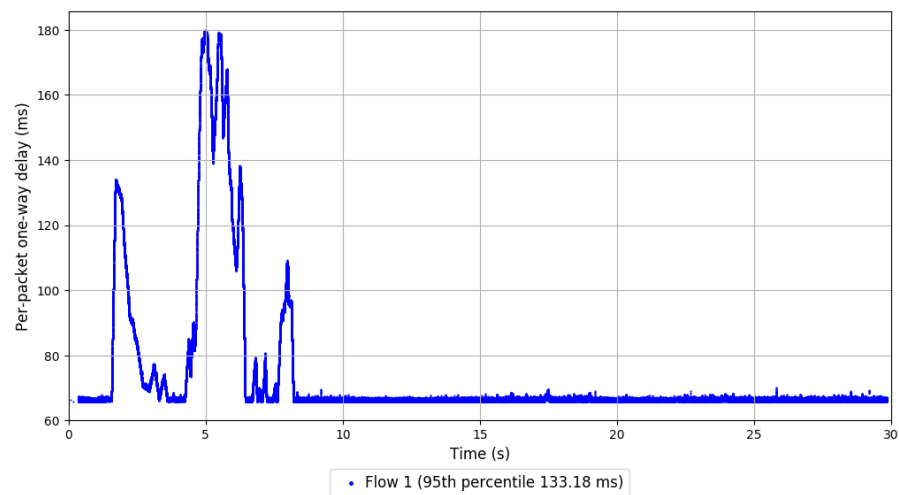
Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 32.40 Mbit/s) --- Flow 1 egress (mean 32.12 Mbit/s)

Flow 1 (95th percentile 67.67 ms)

```
Run 5: Statistics of PCC-Allegro

Start at: 2018-12-20 06:15:22
End at: 2018-12-20 06:15:52
Local clock offset: 9.484 ms
Remote clock offset: 46.595 ms


# Below is generated by plot.py at 2018-12-20 06:31:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 30.18 Mbit/s
95th percentile per-packet one-way delay: 70.723 ms
Loss rate: 1.50%
-- Flow 1:
Average throughput: 30.18 Mbit/s
95th percentile per-packet one-way delay: 70.723 ms
Loss rate: 1.50%
```

Run 5: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 30.53 Mbit/s) --- Flow 1 egress (mean 30.18 Mbit/s)
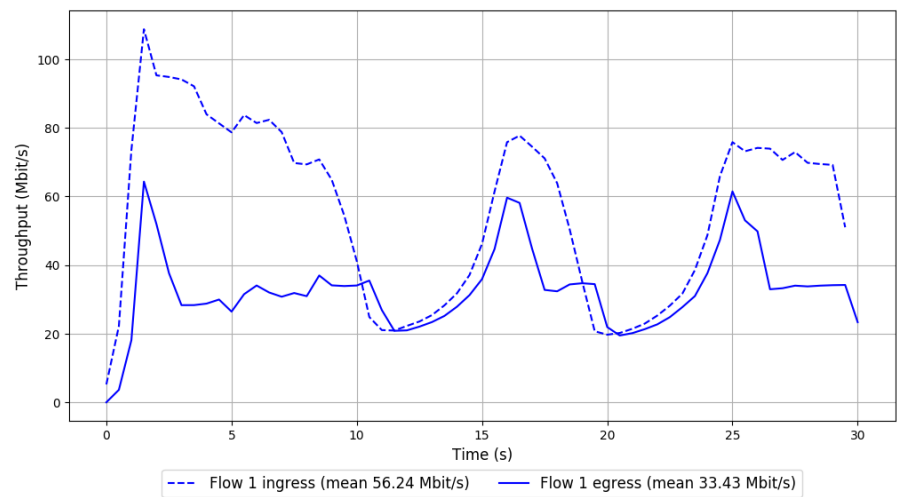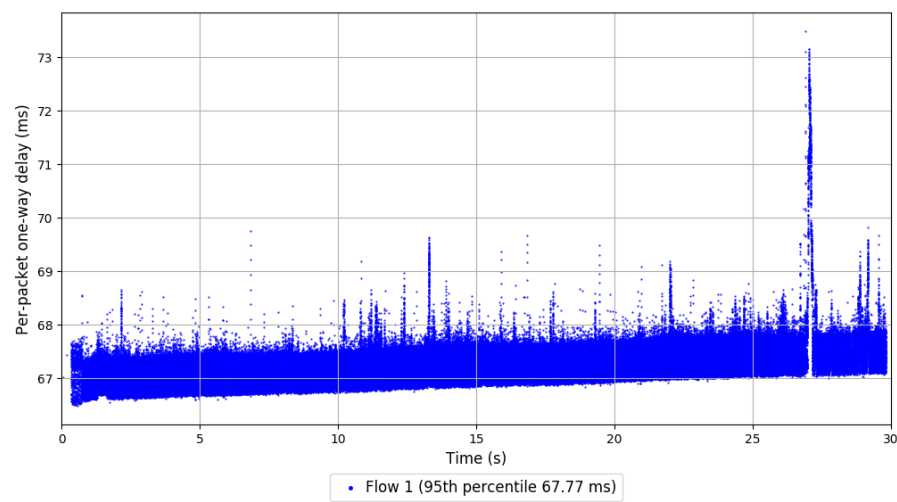

Flow 1 (95th percentile 70.72 ms)

```
Run 1: Statistics of PCC-Expr

Start at: 2018-12-20 04:51:06
End at: 2018-12-20 04:51:36
Local clock offset: 7.387 ms
Remote clock offset: 6.458 ms

# Below is generated by plot.py at 2018-12-20 06:32:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 33.43 Mbit/s
95th percentile per-packet one-way delay: 133.179 ms
Loss rate: 40.76%
-- Flow 1:
Average throughput: 33.43 Mbit/s
95th percentile per-packet one-way delay: 133.179 ms
Loss rate: 40.76%
```
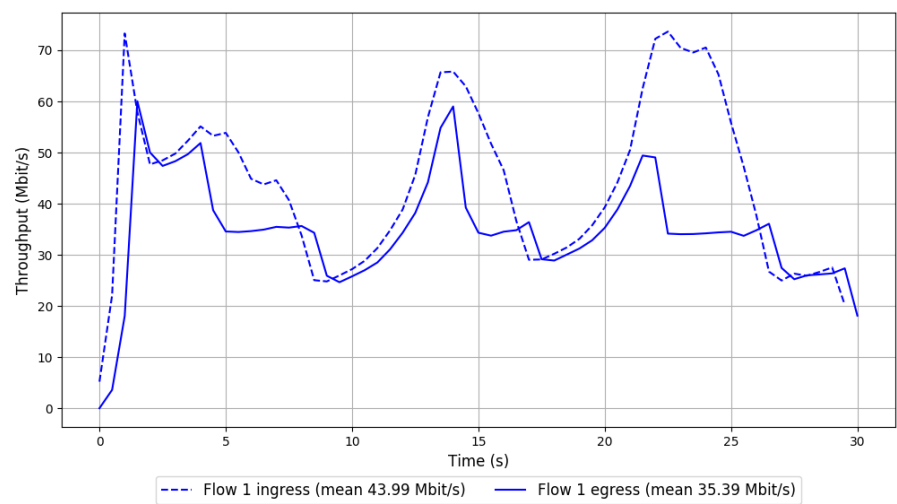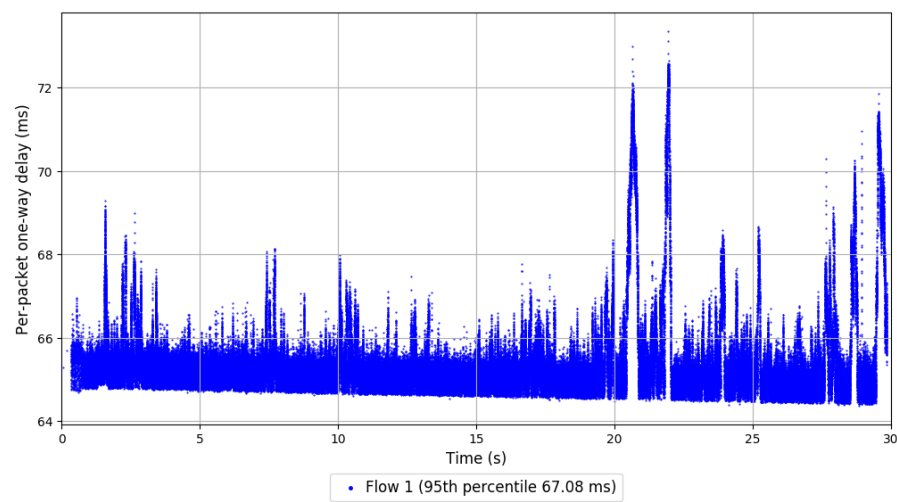
Run 1: Report of PCC-Expr — Data Link

```
Run 2: Statistics of PCC-Expr

Start at: 2018-12-20 05:13:28
End at: 2018-12-20 05:13:58
Local clock offset: 8.718 ms
Remote clock offset: 48.439 ms


# Below is generated by plot.py at 2018-12-20 06:32:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 35.39 Mbit/s
95th percentile per-packet one-way delay: 67.767 ms
Loss rate: 19.81%
-- Flow 1:
Average throughput: 35.39 Mbit/s
95th percentile per-packet one-way delay: 67.767 ms
Loss rate: 19.81%
```

Run 2: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 43.99 Mbit/s) ----   Flow 1 egress (mean 35.39 Mbit/s) ——
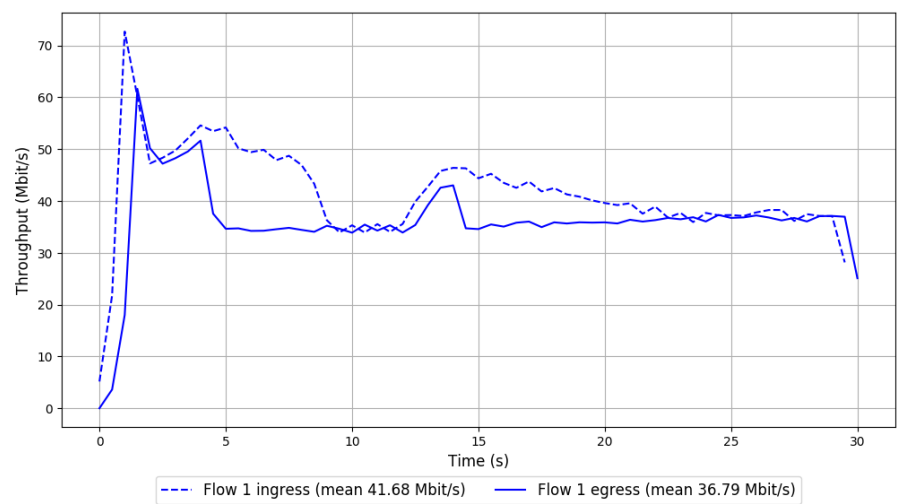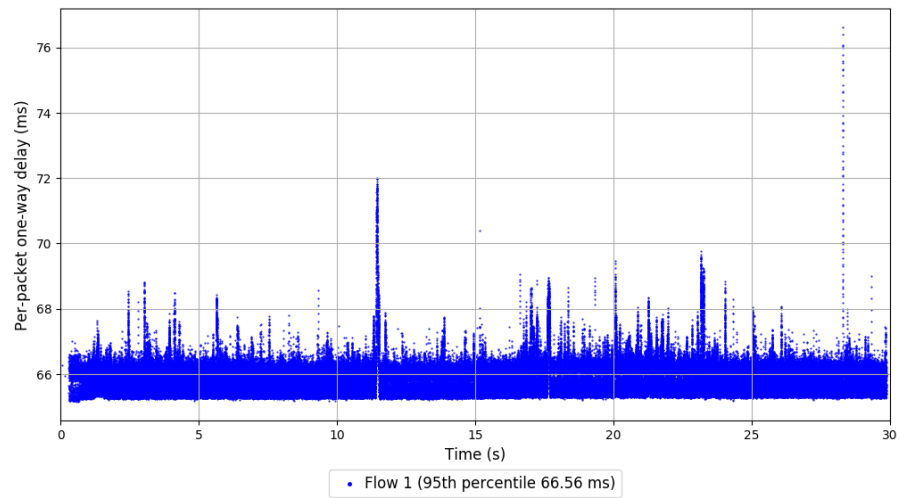

• Flow 1 (95th percentile 67.77 ms)

```
Run 3: Statistics of PCC-Expr

Start at: 2018-12-20 05:35:37
End at: 2018-12-20 05:36:07
Local clock offset: 10.32 ms
Remote clock offset: 60.255 ms


# Below is generated by plot.py at 2018-12-20 06:32:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 36.79 Mbit/s
95th percentile per-packet one-way delay: 67.084 ms
Loss rate: 12.03%
-- Flow 1:
Average throughput: 36.79 Mbit/s
95th percentile per-packet one-way delay: 67.084 ms
Loss rate: 12.03%
```

Run 3: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 41.68 Mbit/s) --- Flow 1 egress (mean 36.79 Mbit/s)

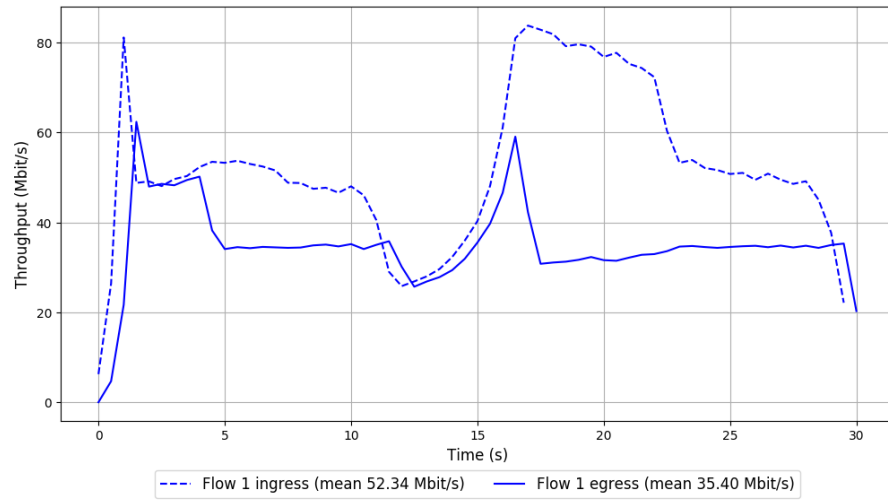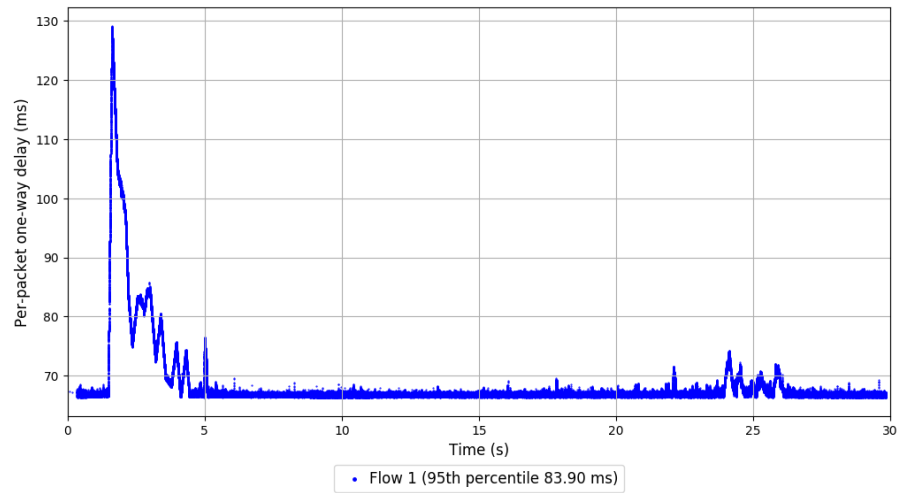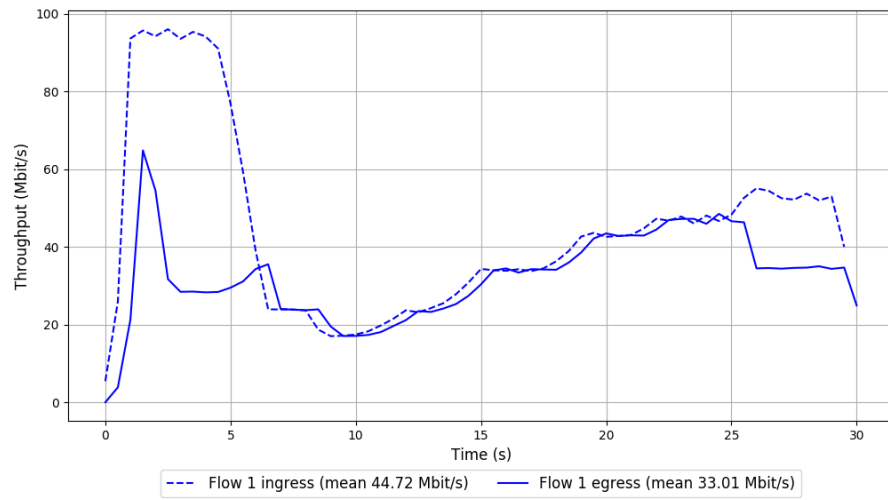

Flow 1 (95th percentile 67.08 ms)

```
Run 4: Statistics of PCC-Expr

Start at: 2018-12-20 05:57:45
End at: 2018-12-20 05:58:15
Local clock offset: 10.761 ms
Remote clock offset: 55.611 ms

# Below is generated by plot.py at 2018-12-20 06:32:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 35.40 Mbit/s
95th percentile per-packet one-way delay: 66.555 ms
Loss rate: 32.62%
-- Flow 1:
Average throughput: 35.40 Mbit/s
95th percentile per-packet one-way delay: 66.555 ms
Loss rate: 32.62%
```

Run 4: Report of PCC-Expr — Data Link

```
Run 5: Statistics of PCC-Expr

Start at: 2018-12-20 06:19:59
End at: 2018-12-20 06:20:29
Local clock offset: 9.444 ms
Remote clock offset: 48.913 ms


# Below is generated by plot.py at 2018-12-20 06:32:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 33.01 Mbit/s
95th percentile per-packet one-way delay: 83.903 ms
Loss rate: 26.48%
-- Flow 1:
Average throughput: 33.01 Mbit/s
95th percentile per-packet one-way delay: 83.903 ms
Loss rate: 26.48%
```

Run 5: Report of PCC-Expr — Data Link

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-12-20 04:39:29
End at: 2018-12-20 04:39:59
Local clock offset: 8.998 ms
Remote clock offset: 5.194 ms

# Below is generated by plot.py at 2018-12-20 06:32:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 37.45 Mbit/s
95th percentile per-packet one-way delay: 69.013 ms
Loss rate: 1.69%
-- Flow 1:
Average throughput: 37.45 Mbit/s
95th percentile per-packet one-way delay: 69.013 ms
Loss rate: 1.69%
```
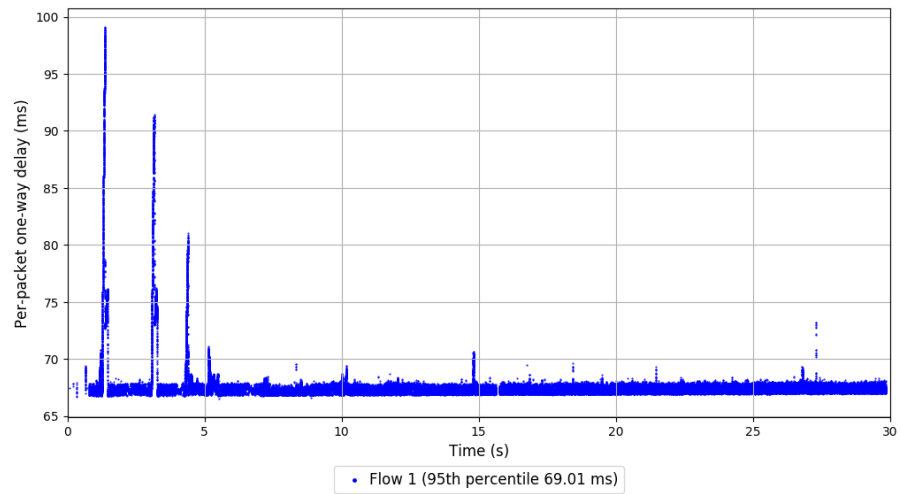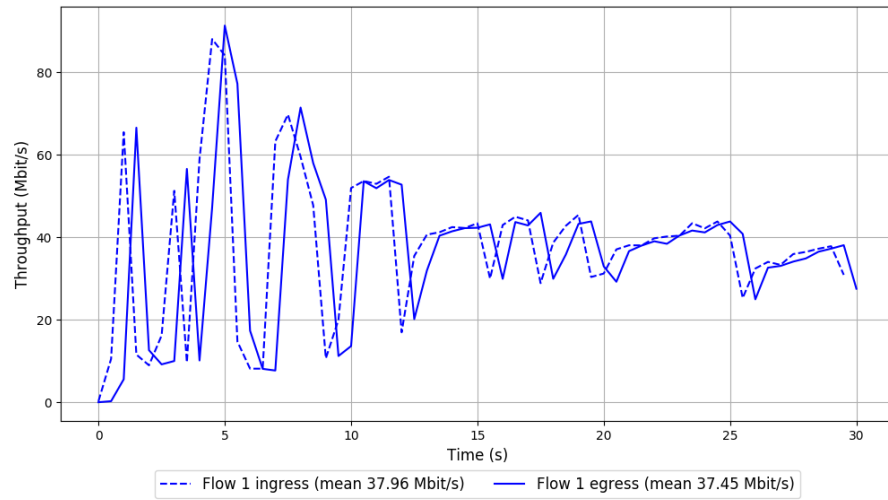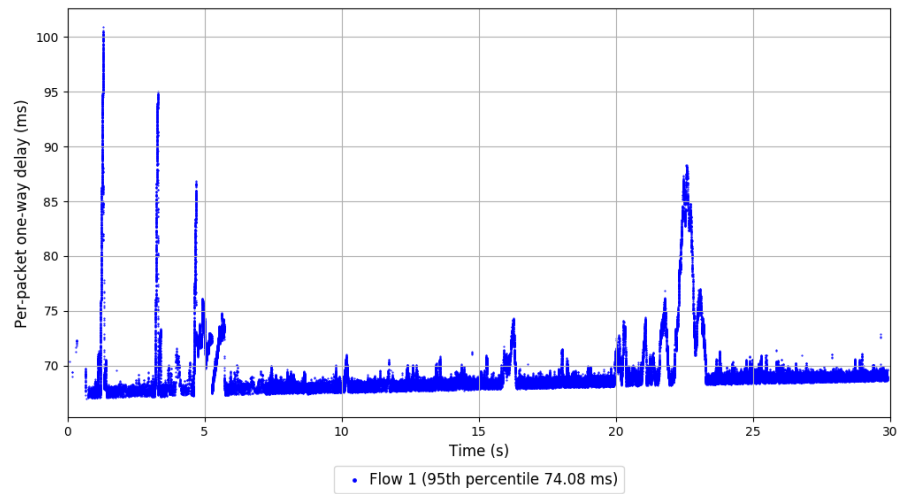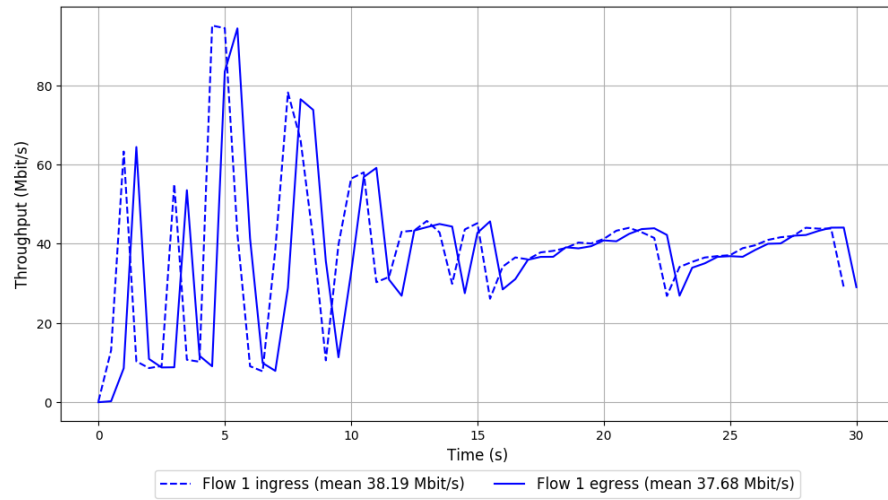
Run 1: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 37.96 Mbit/s) ----   Flow 1 egress (mean 37.45 Mbit/s) ———

Flow 1 (95th percentile 69.01 ms)

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-12-20 05:01:53
End at: 2018-12-20 05:02:23
Local clock offset: 7.194 ms
Remote clock offset: 24.502 ms


# Below is generated by plot.py at 2018-12-20 06:32:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 37.68 Mbit/s
95th percentile per-packet one-way delay: 74.083 ms
Loss rate: 1.66%
-- Flow 1:
Average throughput: 37.68 Mbit/s
95th percentile per-packet one-way delay: 74.083 ms
Loss rate: 1.66%
```
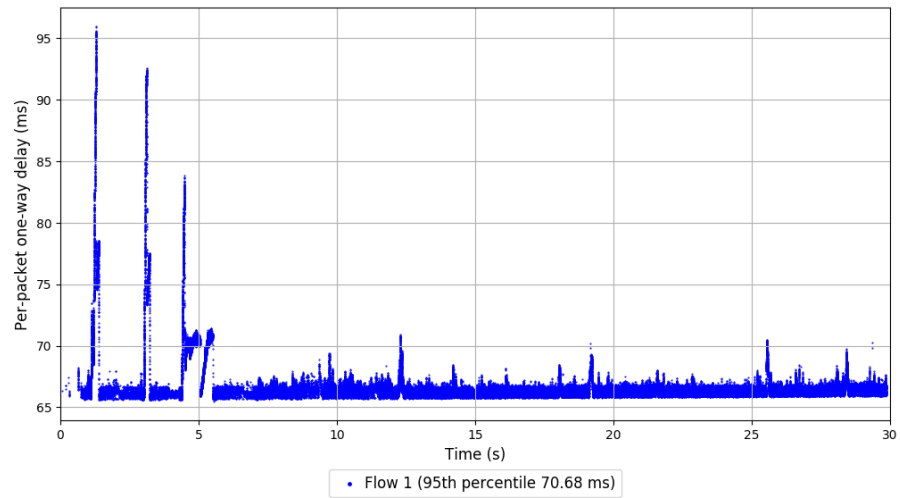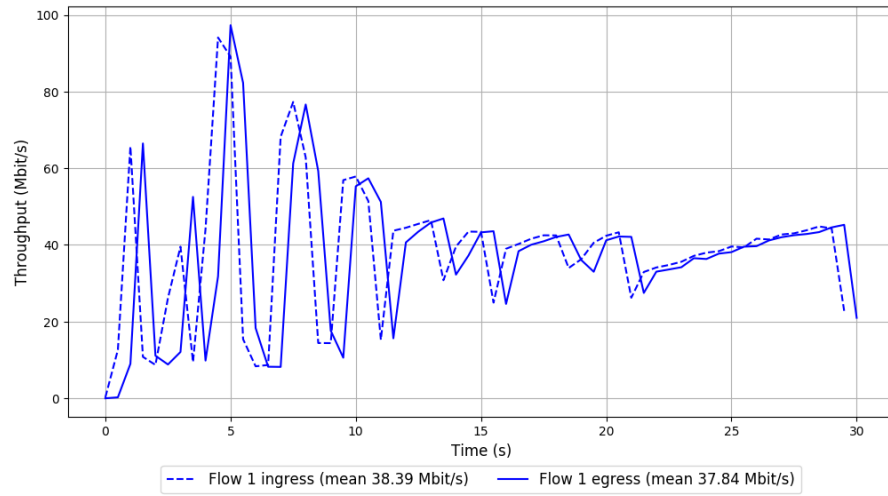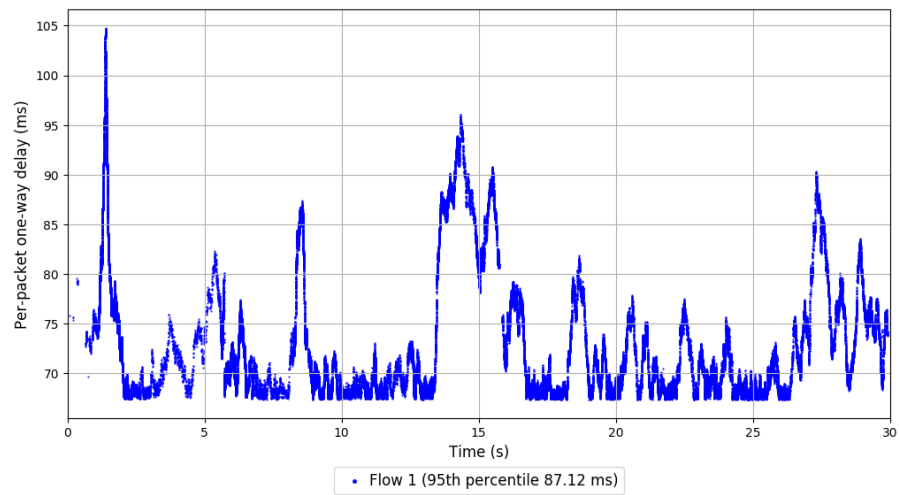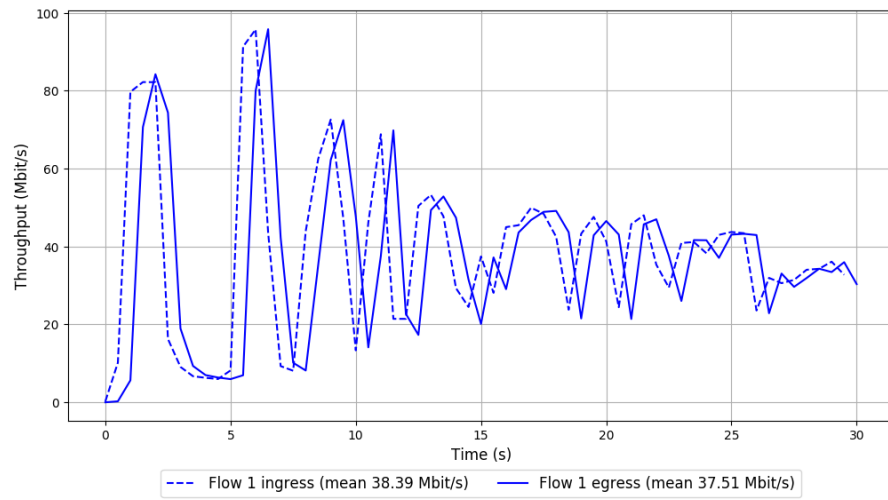
Run 2: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 38.19 Mbit/s) ----- Flow 1 egress (mean 37.68 Mbit/s)

Flow 1 (95th percentile 74.08 ms)

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-12-20 05:24:05
End at: 2018-12-20 05:24:35
Local clock offset: 9.689 ms
Remote clock offset: 59.246 ms


# Below is generated by plot.py at 2018-12-20 06:32:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 37.84 Mbit/s
95th percentile per-packet one-way delay: 70.681 ms
Loss rate: 1.76%
-- Flow 1:
Average throughput: 37.84 Mbit/s
95th percentile per-packet one-way delay: 70.681 ms
Loss rate: 1.76%
```

Run 3: Report of QUIC Cubic — Data Link

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-12-20 05:46:11
End at: 2018-12-20 05:46:42
Local clock offset: 10.421 ms
Remote clock offset: 53.544 ms

# Below is generated by plot.py at 2018-12-20 06:32:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 37.51 Mbit/s
95th percentile per-packet one-way delay: 87.124 ms
Loss rate: 2.65%
-- Flow 1:
Average throughput: 37.51 Mbit/s
95th percentile per-packet one-way delay: 87.124 ms
Loss rate: 2.65%
```

Run 4: Report of QUIC Cubic — Data Link

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-12-20 06:08:24
End at: 2018-12-20 06:08:54
Local clock offset: 10.13 ms
Remote clock offset: 53.356 ms


# Below is generated by plot.py at 2018-12-20 06:32:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 37.67 Mbit/s
95th percentile per-packet one-way delay: 76.796 ms
Loss rate: 1.86%
-- Flow 1:
Average throughput: 37.67 Mbit/s
95th percentile per-packet one-way delay: 76.796 ms
Loss rate: 1.86%
```
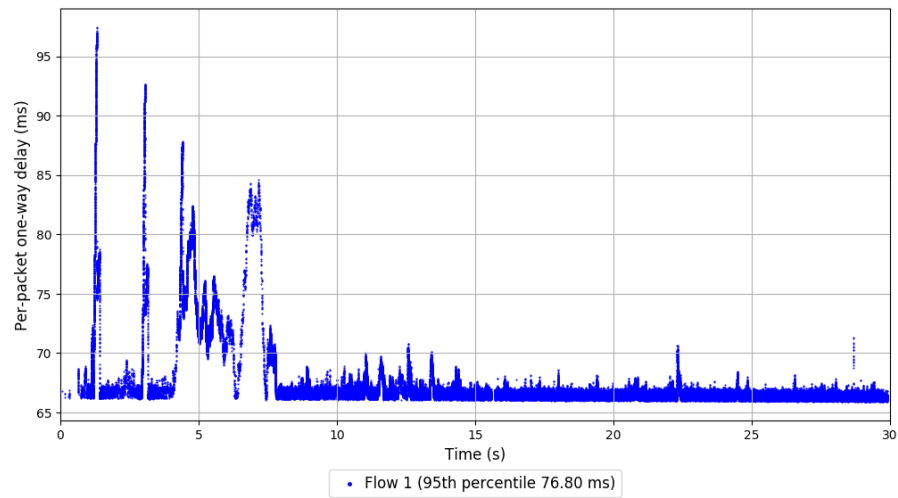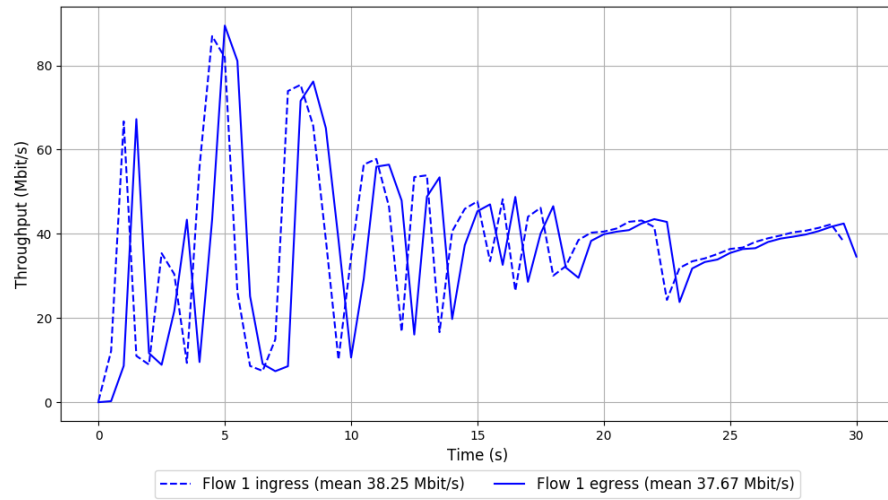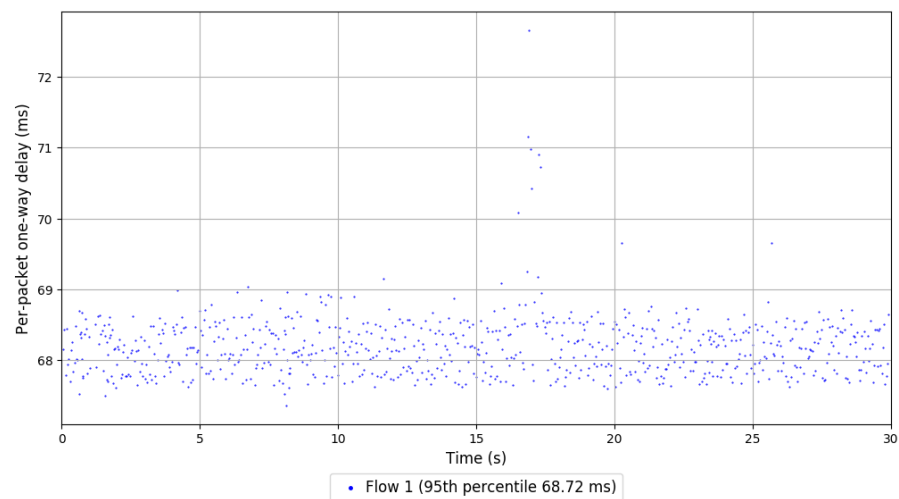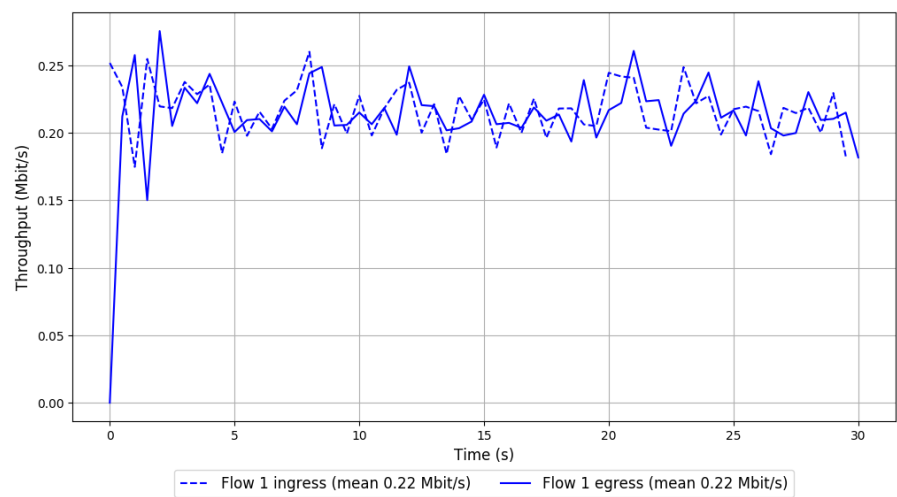
Run 5: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 38.25 Mbit/s) ----- Flow 1 egress (mean 37.67 Mbit/s)
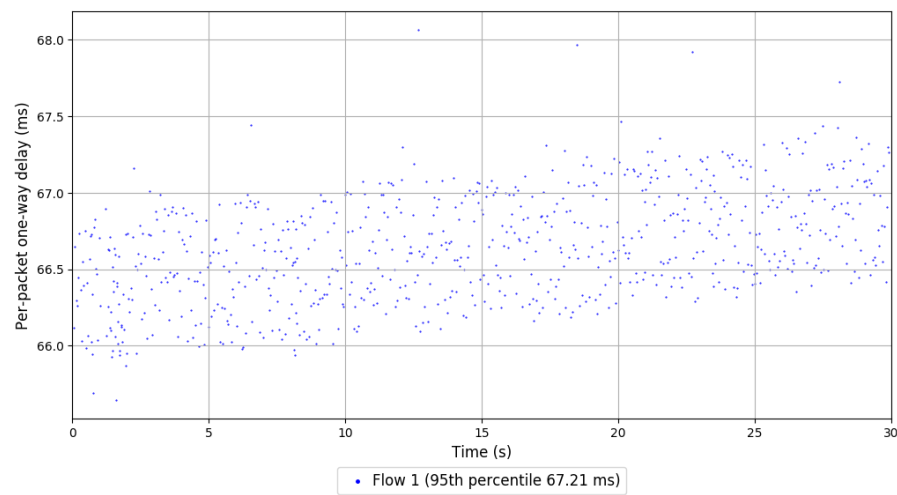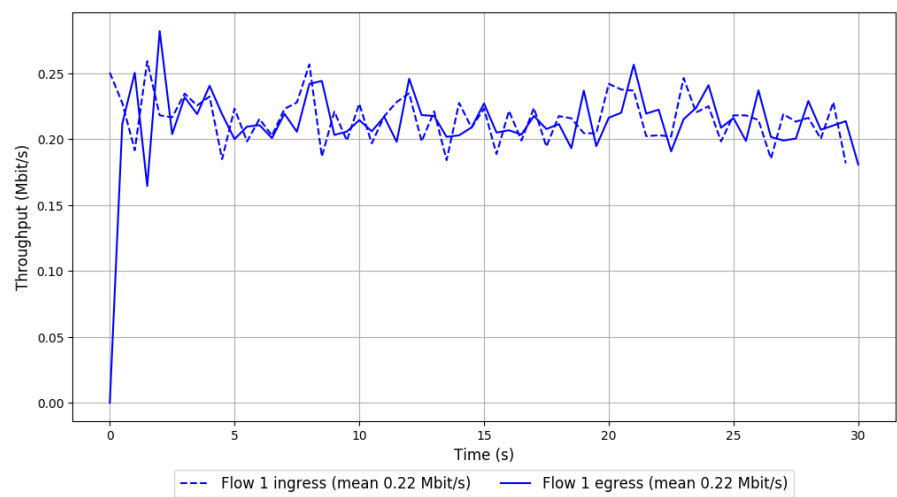

Flow 1 (95th percentile 76.80 ms)

```
Run 1: Statistics of SCReAM

Start at: 2018-12-20 04:49:58
End at: 2018-12-20 04:50:28
Local clock offset: 8.397 ms
Remote clock offset: 6.146 ms


# Below is generated by plot.py at 2018-12-20 06:32:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 68.721 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 68.721 ms
Loss rate: 0.26%
```
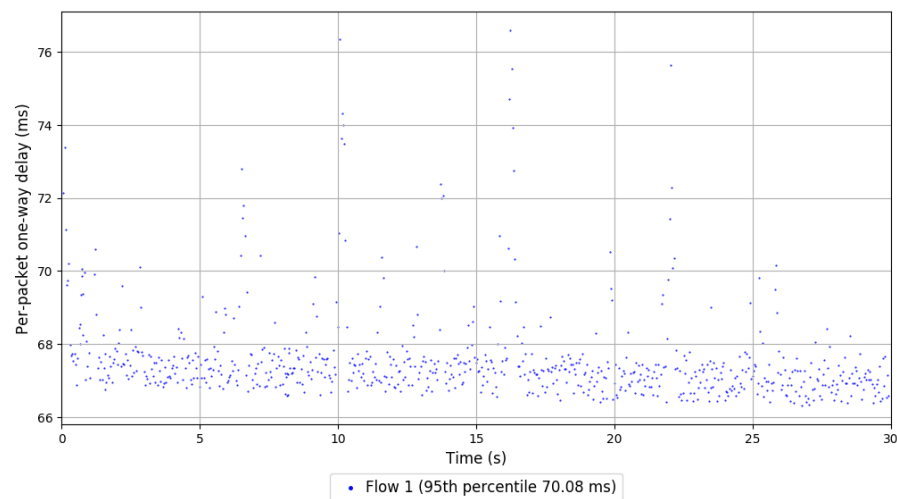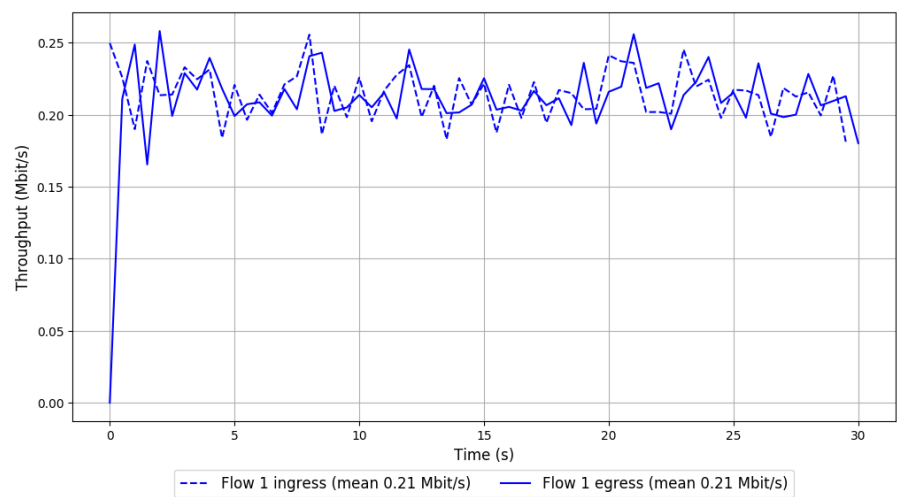
Run 1: Report of SCReAM — Data Link

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

• Flow 1 (95th percentile 68.72 ms)

```
Run 2: Statistics of SCReAM

Start at: 2018-12-20 05:12:20
End at: 2018-12-20 05:12:50
Local clock offset: 8.491 ms
Remote clock offset: 47.696 ms


# Below is generated by plot.py at 2018-12-20 06:32:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 67.211 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 67.211 ms
Loss rate: 0.26%
```
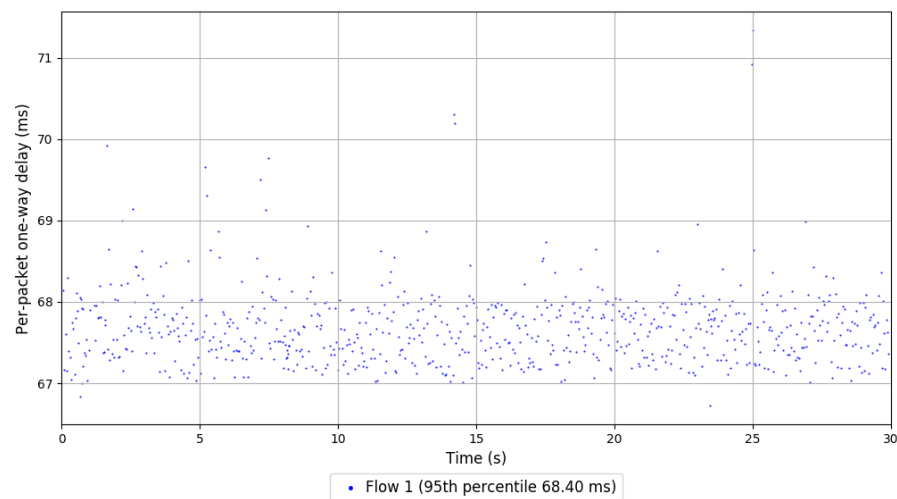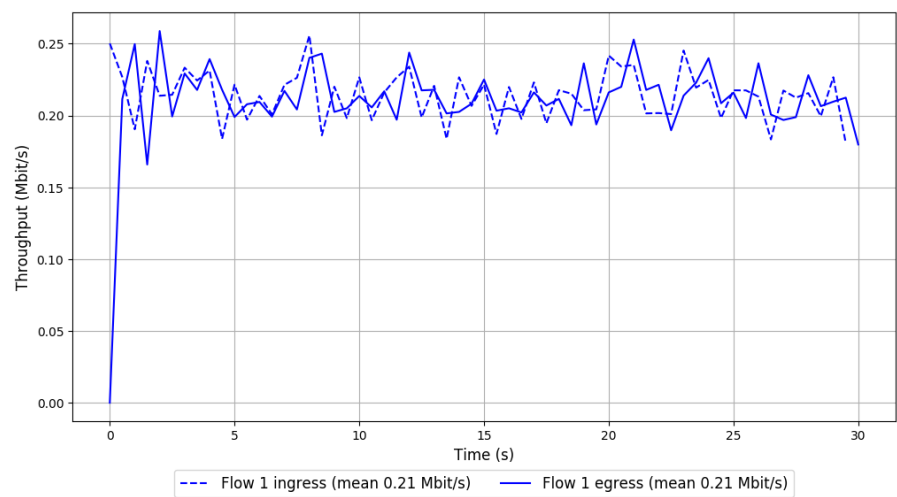
Run 2: Report of SCReAM — Data Link

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

Flow 1 (95th percentile 67.21 ms)

```
Run 3: Statistics of SCReAM

Start at: 2018-12-20 05:34:29
End at: 2018-12-20 05:34:59
Local clock offset: 10.797 ms
Remote clock offset: 59.872 ms


# Below is generated by plot.py at 2018-12-20 06:32:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 70.080 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 70.080 ms
Loss rate: 0.26%
```
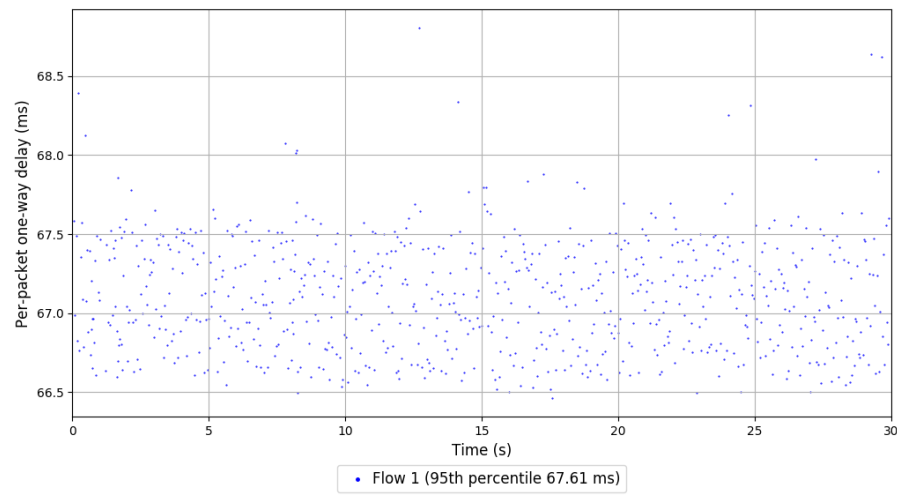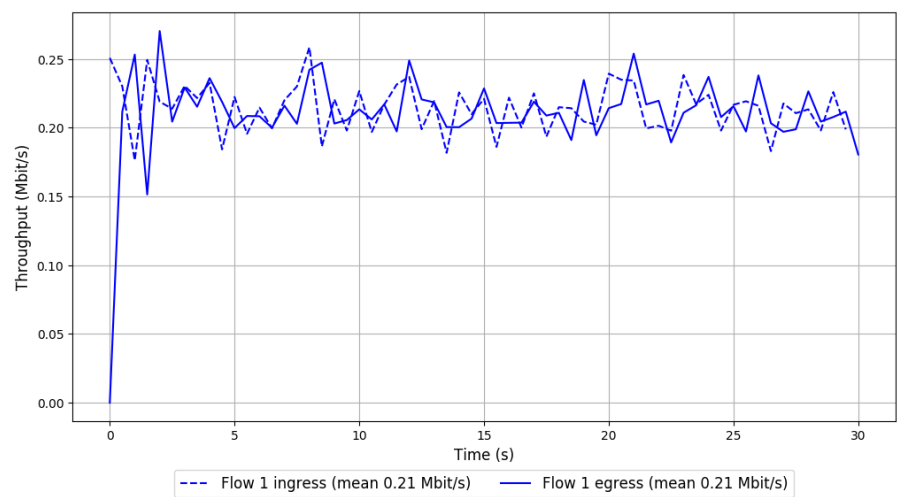
Run 3: Report of SCReAM — Data Link

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

• Flow 1 (95th percentile 70.08 ms)

```
Run 4: Statistics of SCReAM

Start at: 2018-12-20 05:56:37
End at: 2018-12-20 05:57:07
Local clock offset: 11.15 ms
Remote clock offset: 54.432 ms

# Below is generated by plot.py at 2018-12-20 06:32:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 68.401 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 68.401 ms
Loss rate: 0.26%
```

Run 4: Report of SCReAM — Data Link

```
Run 5: Statistics of SCReAM

Start at: 2018-12-20 06:18:50
End at: 2018-12-20 06:19:20
Local clock offset: 9.246 ms
Remote clock offset: 48.992 ms

# Below is generated by plot.py at 2018-12-20 06:32:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 67.613 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 67.613 ms
Loss rate: 0.39%
```
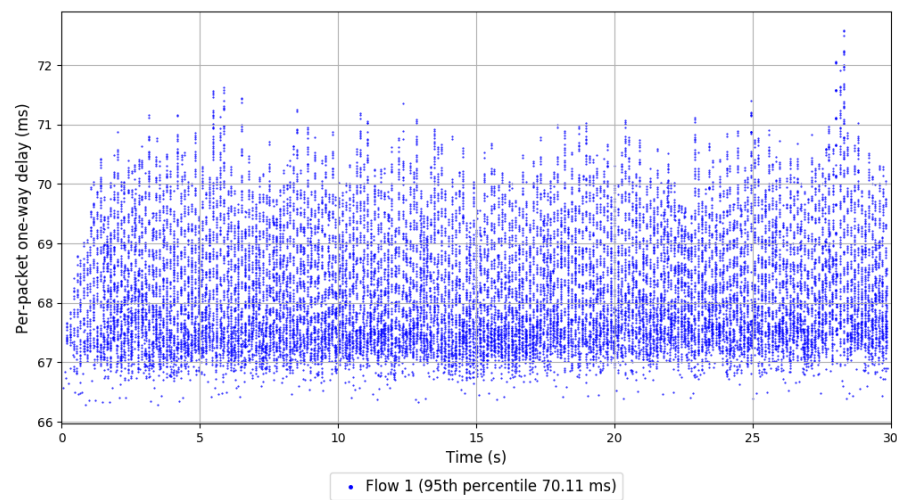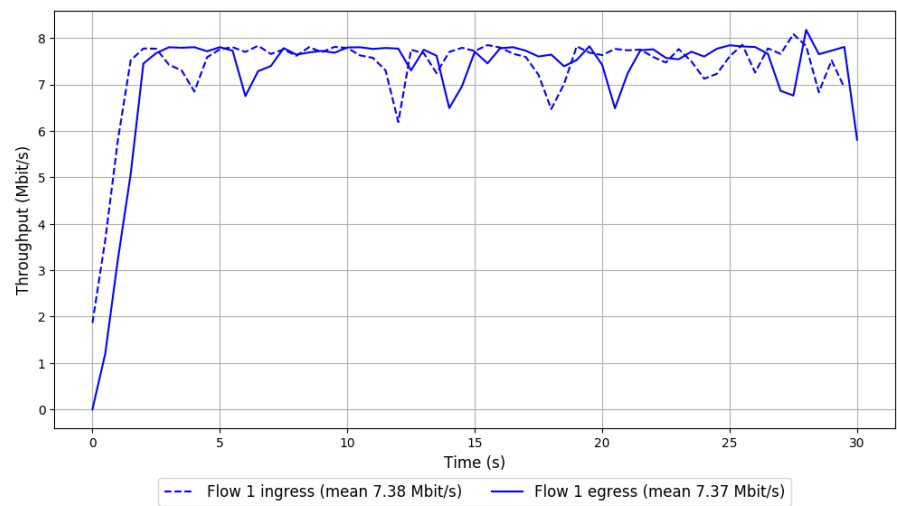
Run 5: Report of SCReAM — Data Link

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

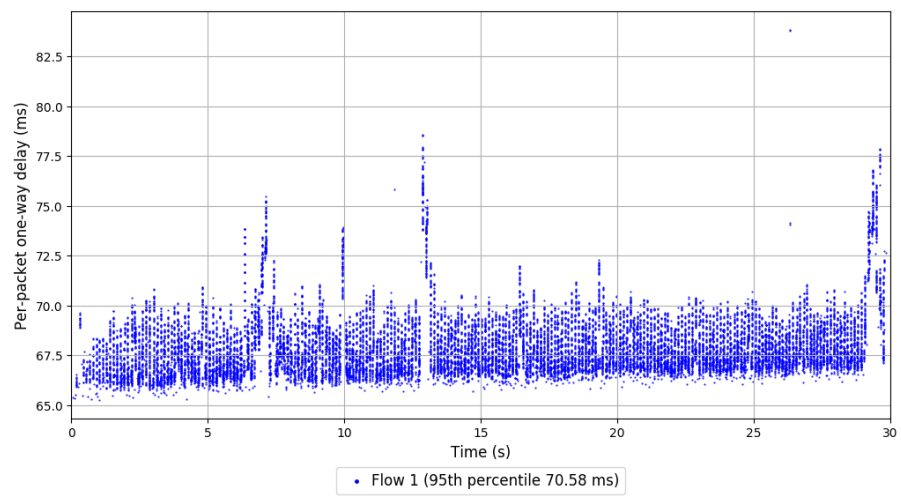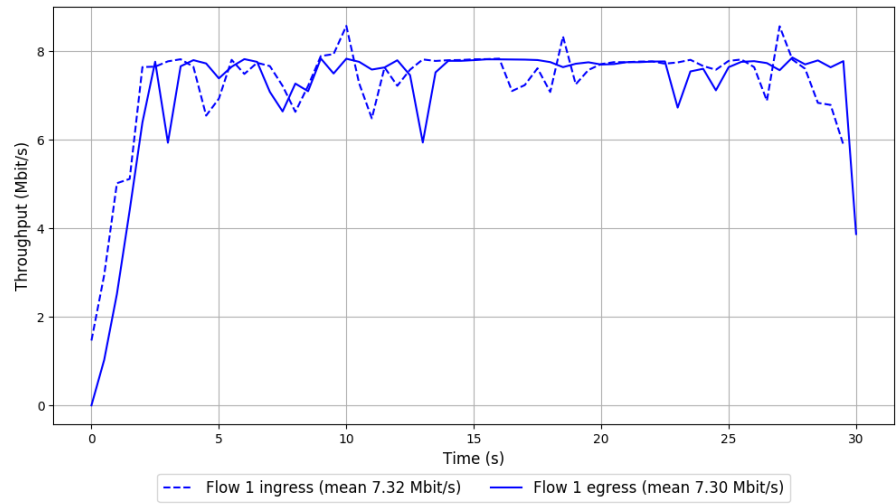Flow 1 (95th percentile 67.61 ms)

```
Run 1: Statistics of Sprout

Start at: 2018-12-20 04:43:00
End at: 2018-12-20 04:43:30
Local clock offset: 8.253 ms
Remote clock offset: 5.996 ms

# Below is generated by plot.py at 2018-12-20 06:32:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.37 Mbit/s
95th percentile per-packet one-way delay: 70.108 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 7.37 Mbit/s
95th percentile per-packet one-way delay: 70.108 ms
Loss rate: 0.42%
```
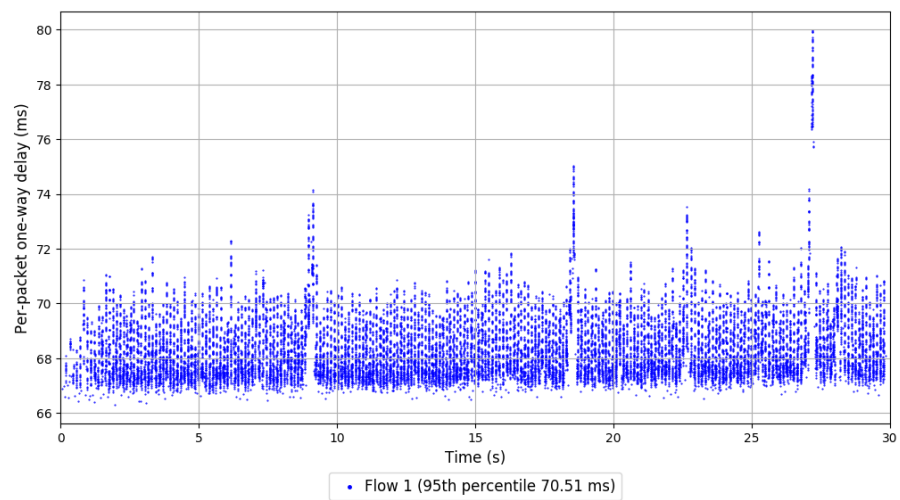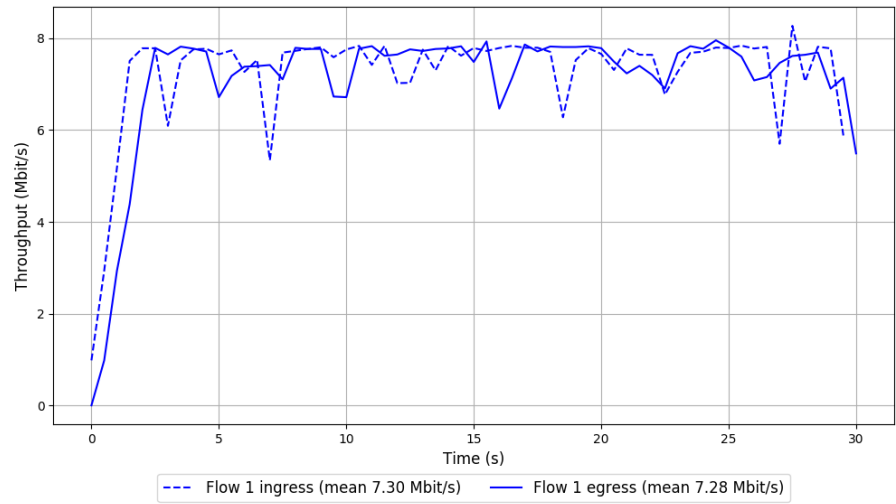
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-12-20 05:05:24
End at: 2018-12-20 05:05:54
Local clock offset: 7.069 ms
Remote clock offset: 35.909 ms


# Below is generated by plot.py at 2018-12-20 06:32:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.30 Mbit/s
95th percentile per-packet one-way delay: 70.577 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 7.30 Mbit/s
95th percentile per-packet one-way delay: 70.577 ms
Loss rate: 0.46%
```
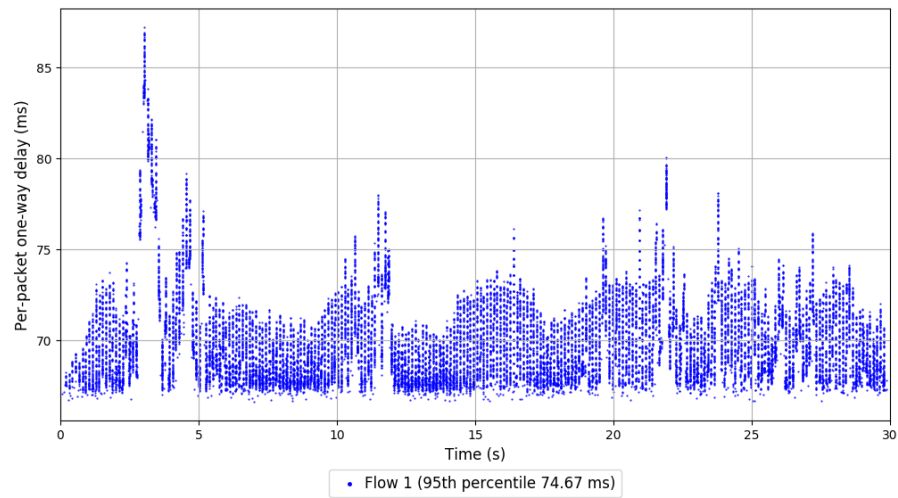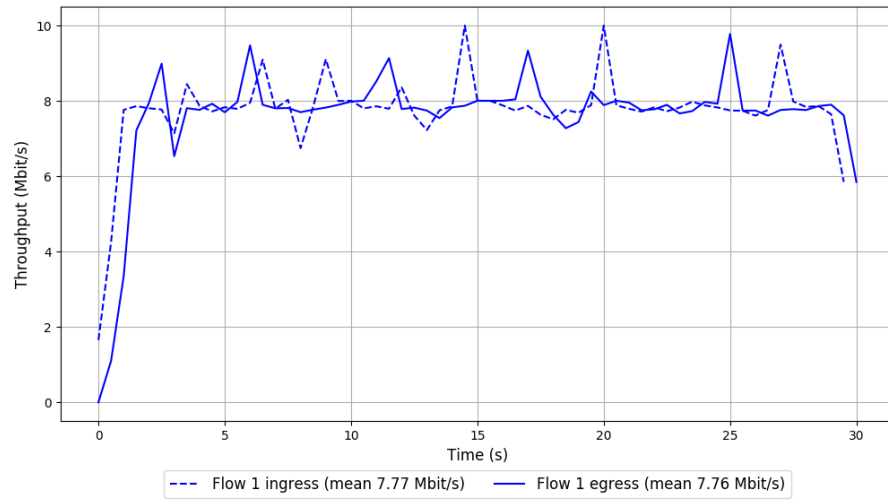
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-12-20 05:27:35
End at: 2018-12-20 05:28:05
Local clock offset: 9.943 ms
Remote clock offset: 61.096 ms


# Below is generated by plot.py at 2018-12-20 06:32:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.28 Mbit/s
95th percentile per-packet one-way delay: 70.507 ms
Loss rate: 0.45%
-- Flow 1:
Average throughput: 7.28 Mbit/s
95th percentile per-packet one-way delay: 70.507 ms
Loss rate: 0.45%
```
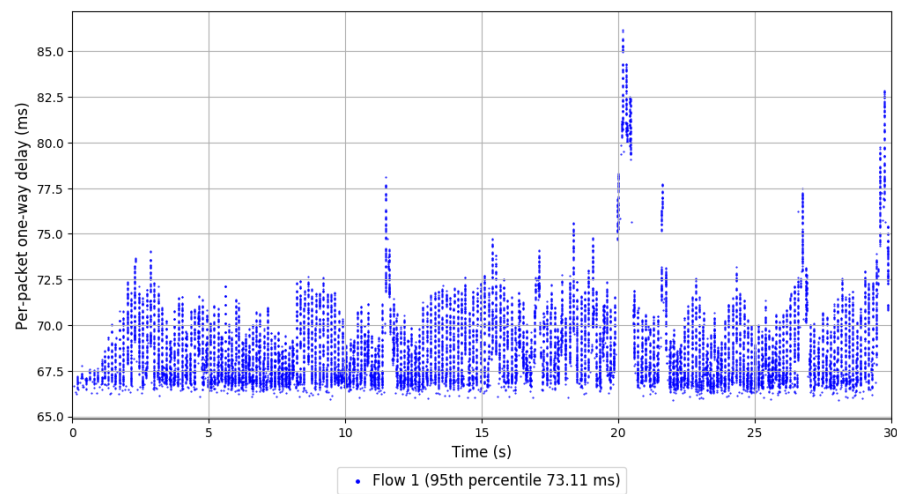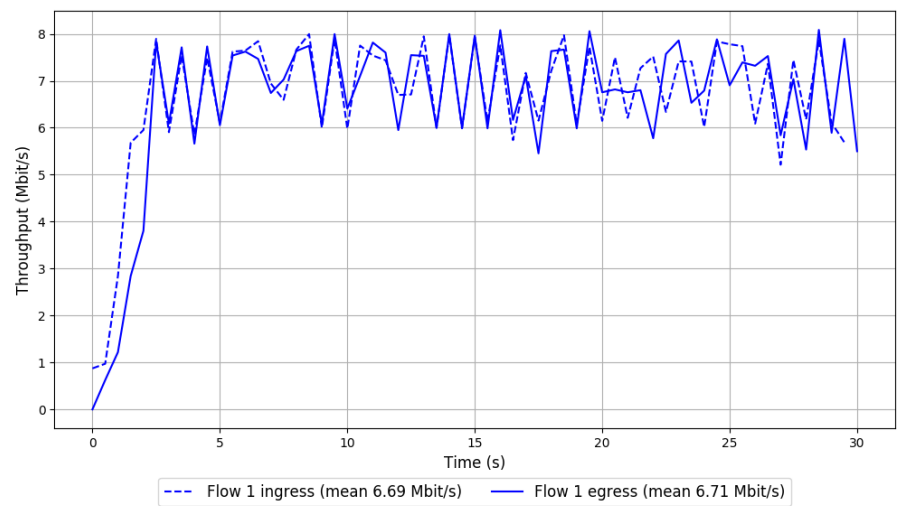
Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2018-12-20 05:49:43
End at: 2018-12-20 05:50:13
Local clock offset: 11.232 ms
Remote clock offset: 54.402 ms


# Below is generated by plot.py at 2018-12-20 06:32:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.76 Mbit/s
95th percentile per-packet one-way delay: 74.666 ms
Loss rate: 0.41%
-- Flow 1:
Average throughput: 7.76 Mbit/s
95th percentile per-packet one-way delay: 74.666 ms
Loss rate: 0.41%
```

Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-12-20 06:11:55
End at: 2018-12-20 06:12:25
Local clock offset: 10.12 ms
Remote clock offset: 51.602 ms


# Below is generated by plot.py at 2018-12-20 06:32:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.71 Mbit/s
95th percentile per-packet one-way delay: 73.109 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 6.71 Mbit/s
95th percentile per-packet one-way delay: 73.109 ms
Loss rate: 0.09%
```
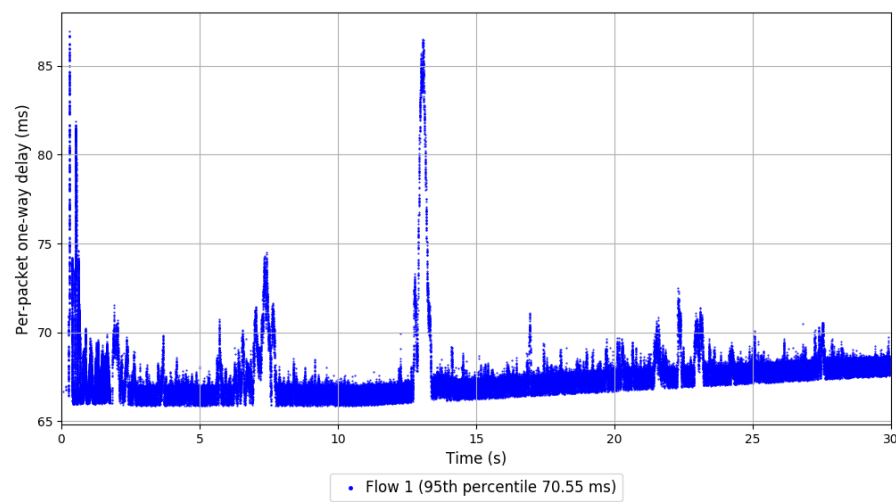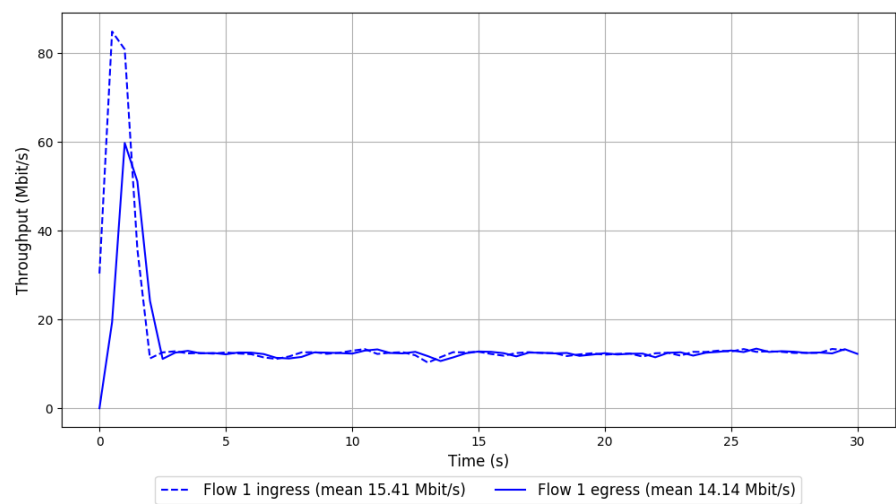
Run 5: Report of Sprout — Data Link

Flow 1 ingress (mean 6.69 Mbit/s)   Flow 1 egress (mean 6.71 Mbit/s)

Flow 1 (95th percentile 73.11 ms)

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

Start at: 2018-12-20 04:57:13
End at: 2018-12-20 04:57:43
Local clock offset: 7.166 ms
Remote clock offset: 6.452 ms


# Below is generated by plot.py at 2018-12-20 06:32:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 14.14 Mbit/s
95th percentile per-packet one-way delay: 70.552 ms
Loss rate: 8.50%
-- Flow 1:
Average throughput: 14.14 Mbit/s
95th percentile per-packet one-way delay: 70.552 ms
Loss rate: 8.50%
```

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

Flow 1 ingress (mean 15.41 Mbit/s) — — —   Flow 1 egress (mean 14.14 Mbit/s) ———

• Flow 1 (95th percentile 70.55 ms)

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

Start at: 2018-12-20 05:19:24
End at: 2018-12-20 05:19:54
Local clock offset: 10.043 ms
Remote clock offset: 55.26 ms
```

Run 2: Report of TaoVA-100x — Data Link
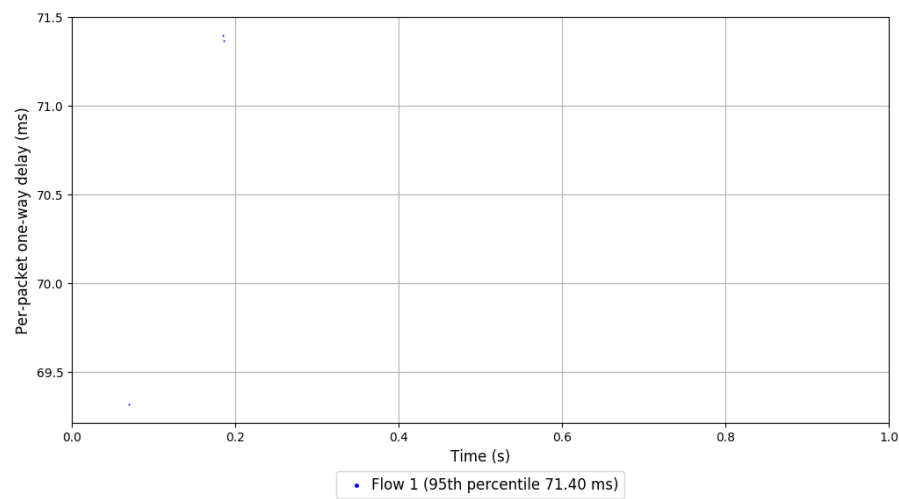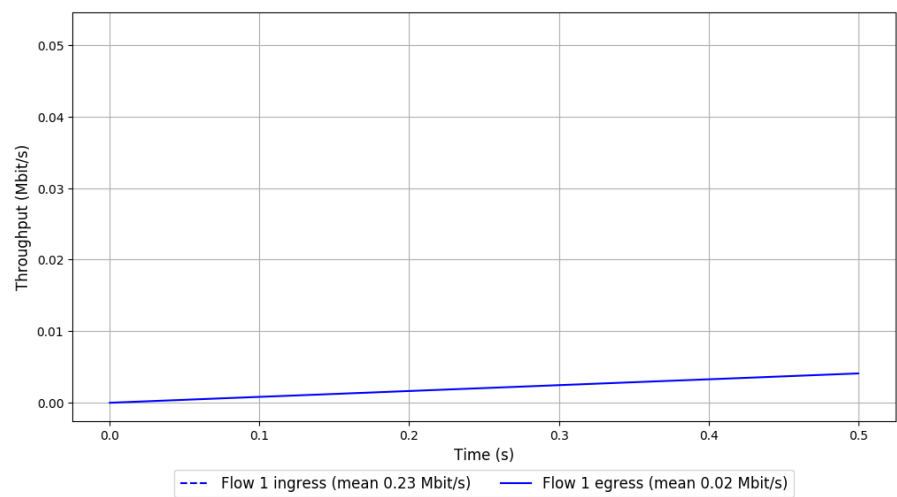
```
Run 3: Statistics of TaoVA-100x

Start at: 2018-12-20 05:41:32
End at: 2018-12-20 05:42:02
Local clock offset: 10.376 ms
Remote clock offset: 55.621 ms
```

Run 3: Report of TaoVA-100x — Data Link
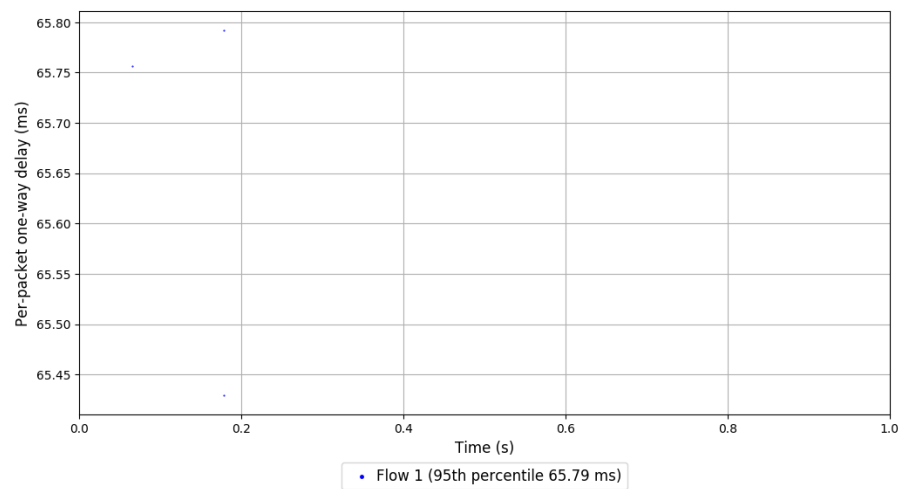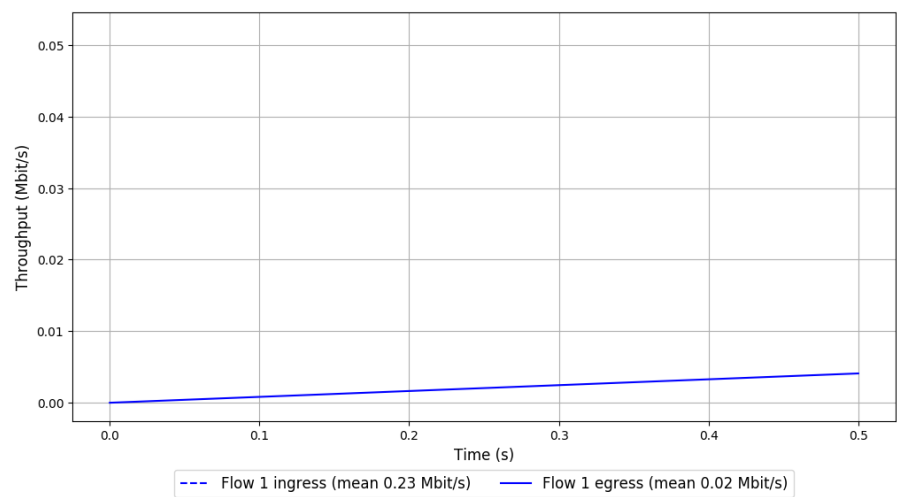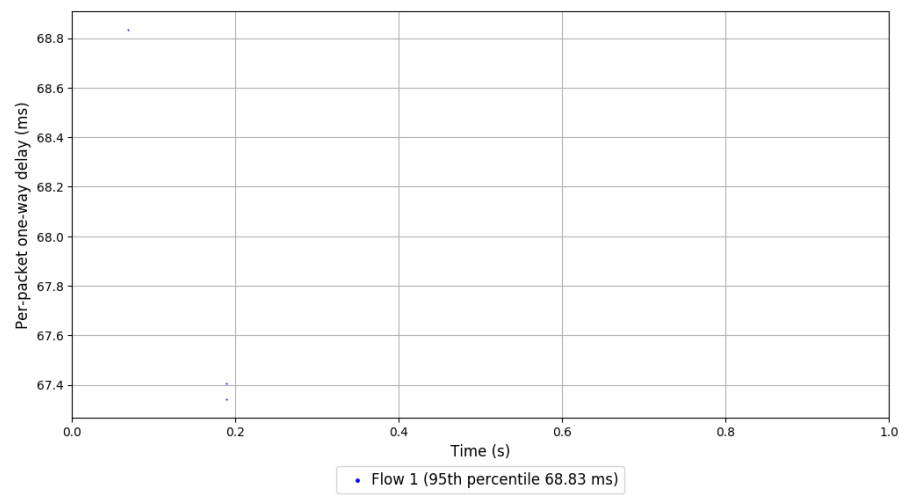
Run 4: Statistics of TaoVA-100x

Start at: 2018-12-20 06:03:44
End at: 2018-12-20 06:04:14
Local clock offset: 10.861 ms
Remote clock offset: 56.573 ms

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

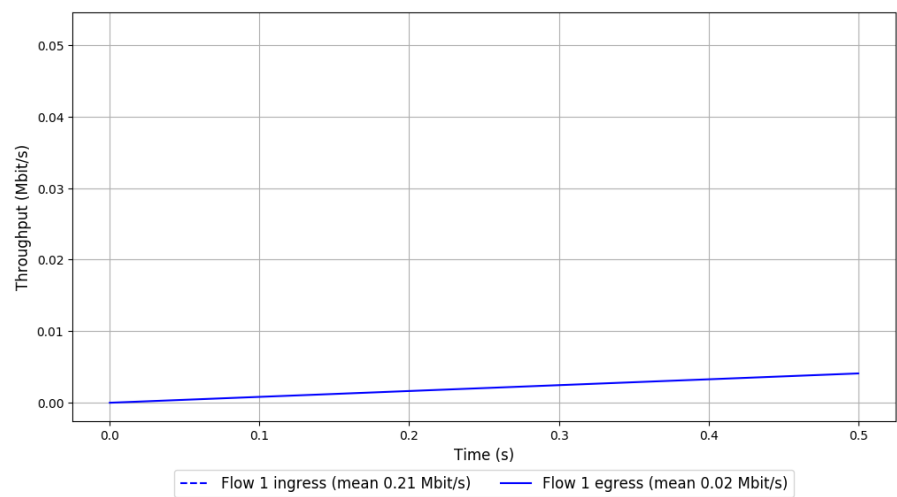Flow 1 ingress (mean 0.23 Mbit/s)   Flow 1 egress (mean 0.02 Mbit/s)

Flow 1 (95th percentile 65.79 ms)

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

Start at: 2018-12-20 06:26:04
End at: 2018-12-20 06:26:34
Local clock offset: 9.33 ms
Remote clock offset: 47.895 ms
```

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

```
Run 1: Statistics of TCP Vegas

Start at: 2018-12-20 04:45:20
End at: 2018-12-20 04:45:50
Local clock offset: 8.841 ms
Remote clock offset: 6.147 ms


# Below is generated by plot.py at 2018-12-20 06:32:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 35.53 Mbit/s
95th percentile per-packet one-way delay: 68.636 ms
Loss rate: 2.14%
-- Flow 1:
Average throughput: 35.53 Mbit/s
95th percentile per-packet one-way delay: 68.636 ms
Loss rate: 2.14%
```
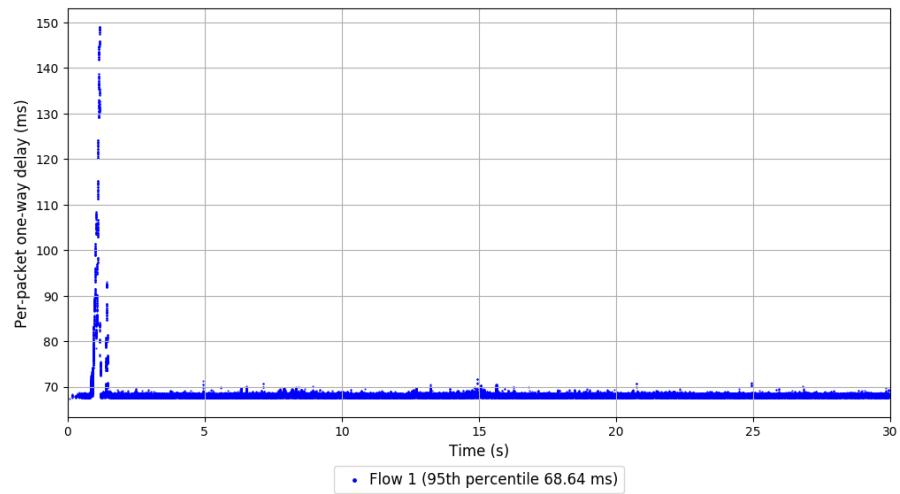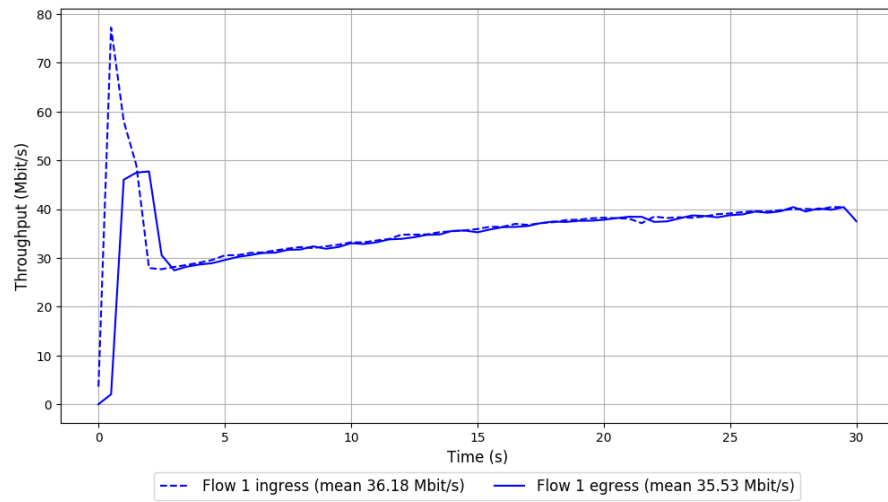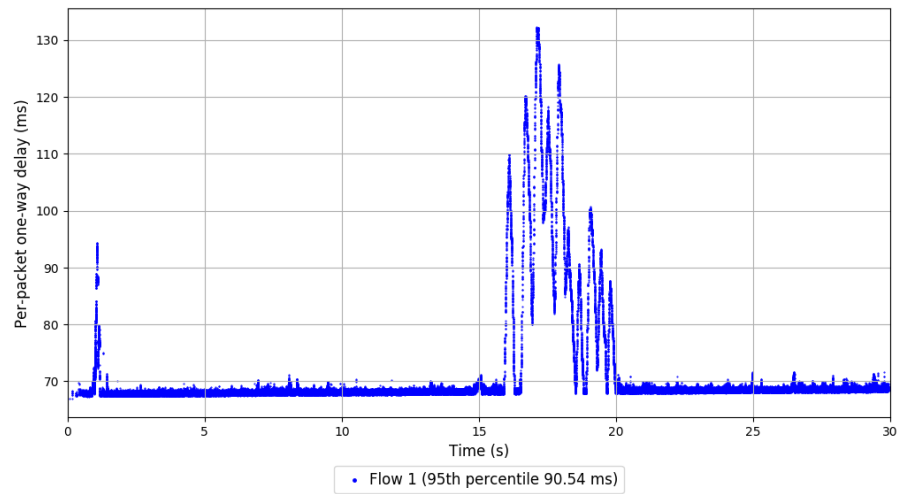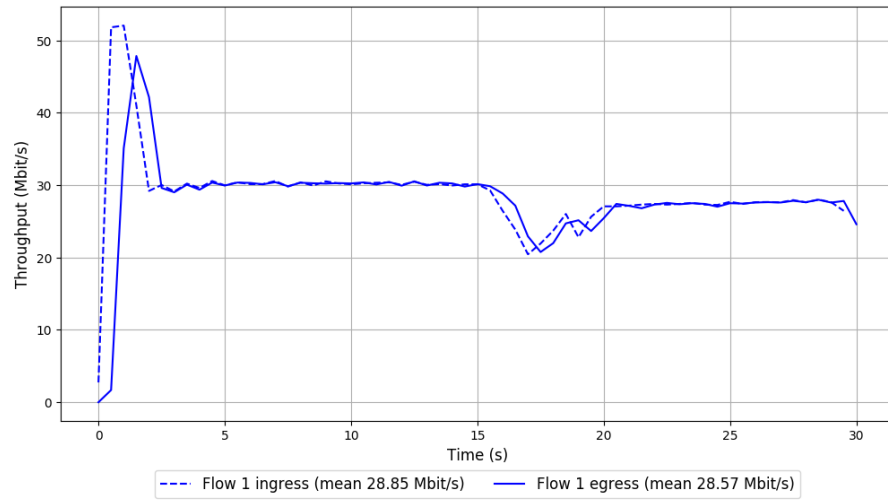
Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-12-20 05:07:44
End at: 2018-12-20 05:08:14
Local clock offset: 8.079 ms
Remote clock offset: 39.666 ms


# Below is generated by plot.py at 2018-12-20 06:32:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 28.57 Mbit/s
95th percentile per-packet one-way delay: 90.536 ms
Loss rate: 1.30%
-- Flow 1:
Average throughput: 28.57 Mbit/s
95th percentile per-packet one-way delay: 90.536 ms
Loss rate: 1.30%
```

Run 2: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 28.85 Mbit/s)   Flow 1 egress (mean 28.57 Mbit/s)

Flow 1 (95th percentile 90.54 ms)
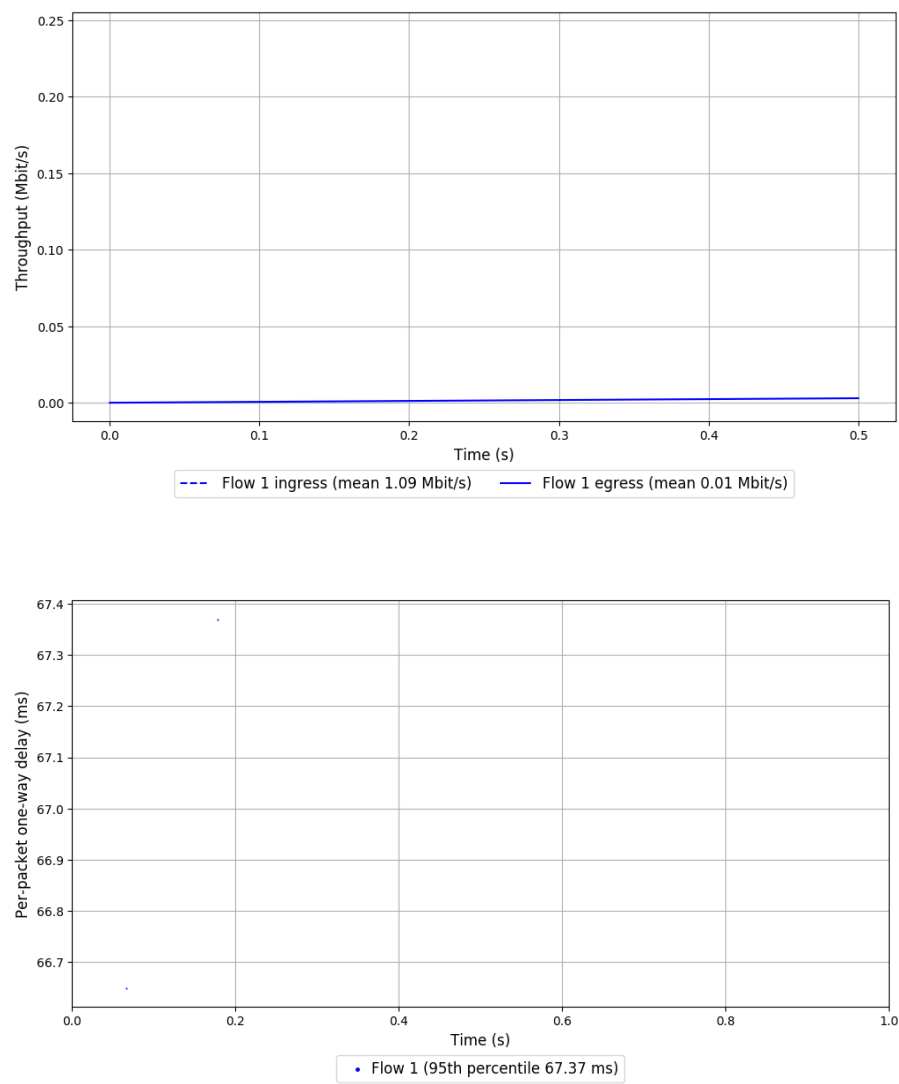
Run 3: Statistics of TCP Vegas

Start at: 2018-12-20 05:29:53
End at: 2018-12-20 05:30:23
Local clock offset: 10.338 ms
Remote clock offset: 62.652 ms

Run 3: Report of TCP Vegas — Data Link

```
Run 4: Statistics of TCP Vegas

Start at: 2018-12-20 05:52:02
End at: 2018-12-20 05:52:32
Local clock offset: 10.985 ms
Remote clock offset: 54.711 ms
```
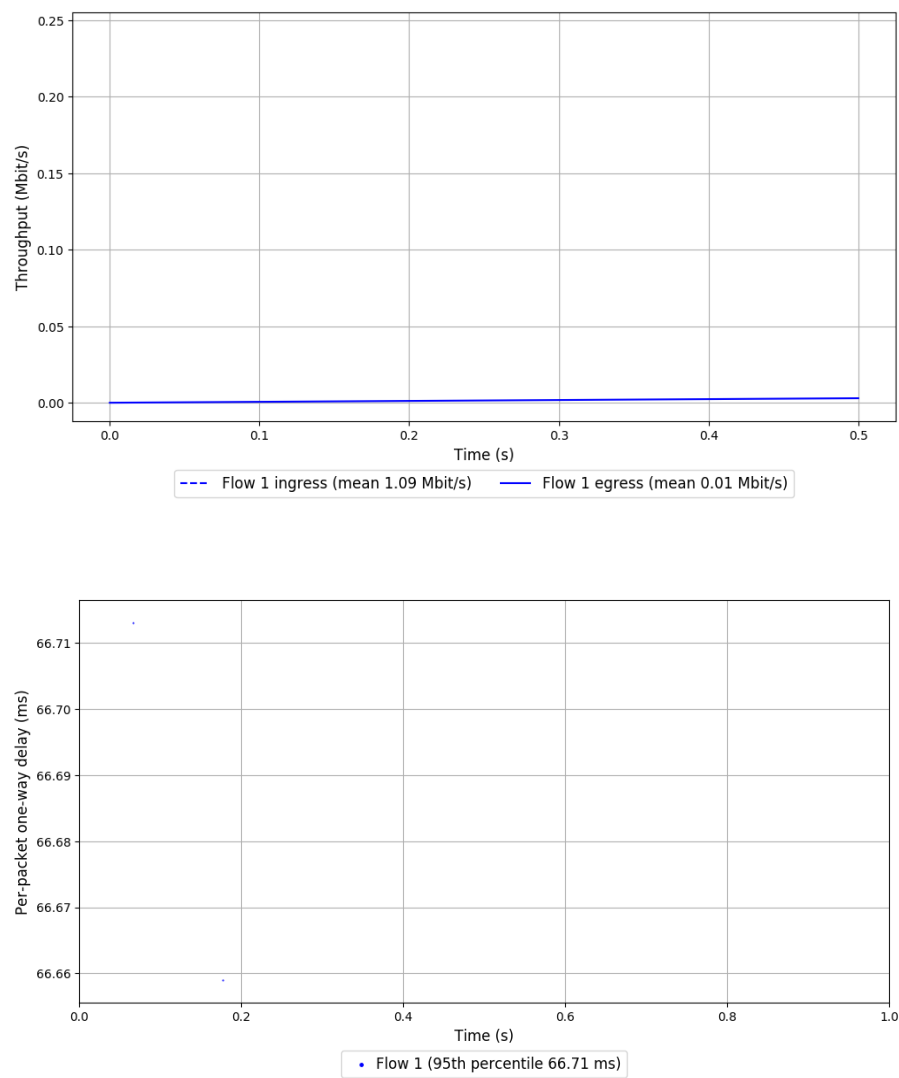
Run 4: Report of TCP Vegas — Data Link
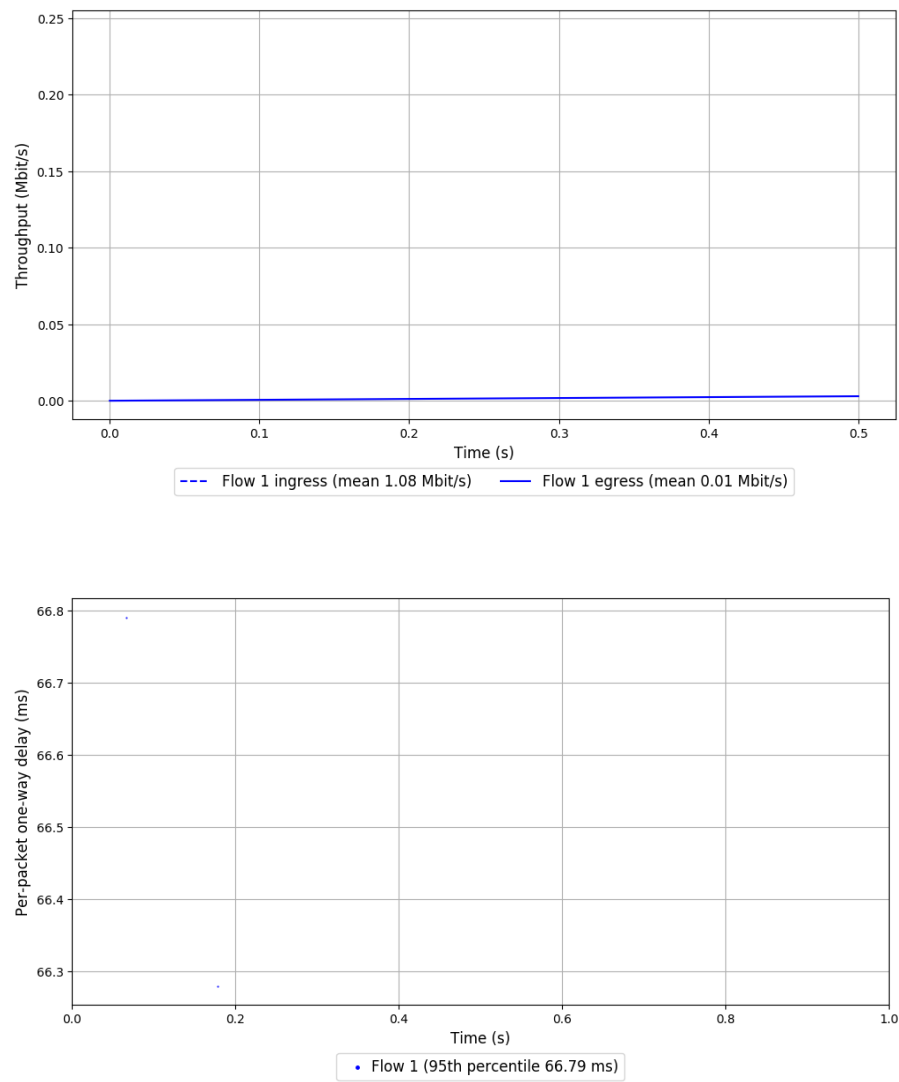
```
Run 5: Statistics of TCP Vegas

Start at: 2018-12-20 06:14:14
End at: 2018-12-20 06:14:44
Local clock offset: 9.789 ms
Remote clock offset: 50.548 ms
```

Run 5: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2018-12-20 04:53:37
End at: 2018-12-20 04:54:07
Local clock offset: 7.446 ms
Remote clock offset: 6.124 ms


# Below is generated by plot.py at 2018-12-20 06:32:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 39.66 Mbit/s
95th percentile per-packet one-way delay: 109.214 ms
Loss rate: 23.69%
-- Flow 1:
Average throughput: 39.66 Mbit/s
95th percentile per-packet one-way delay: 109.214 ms
Loss rate: 23.69%
```
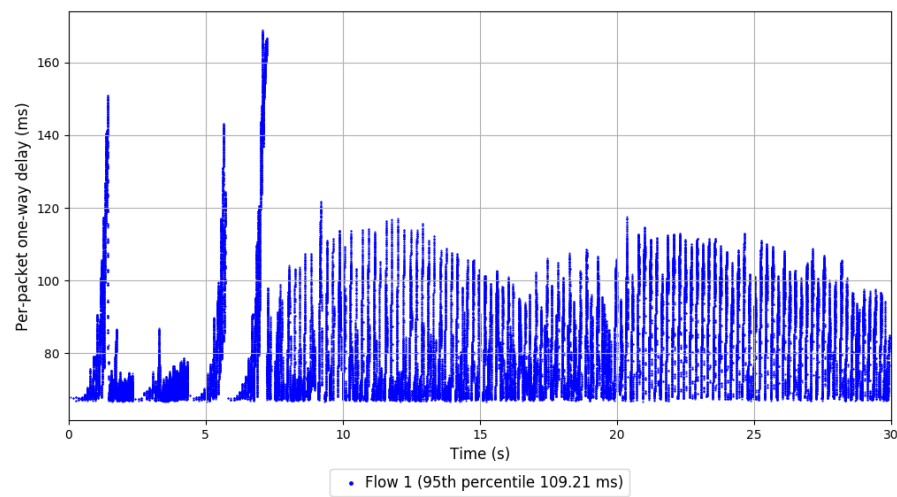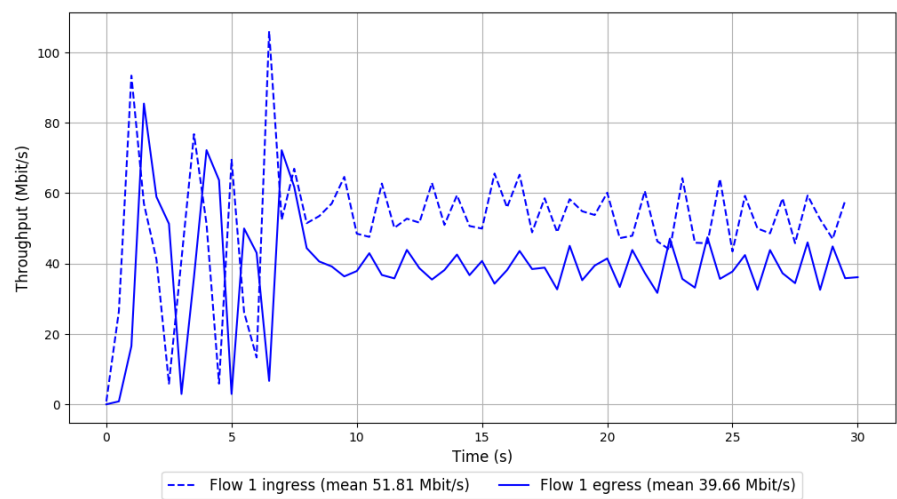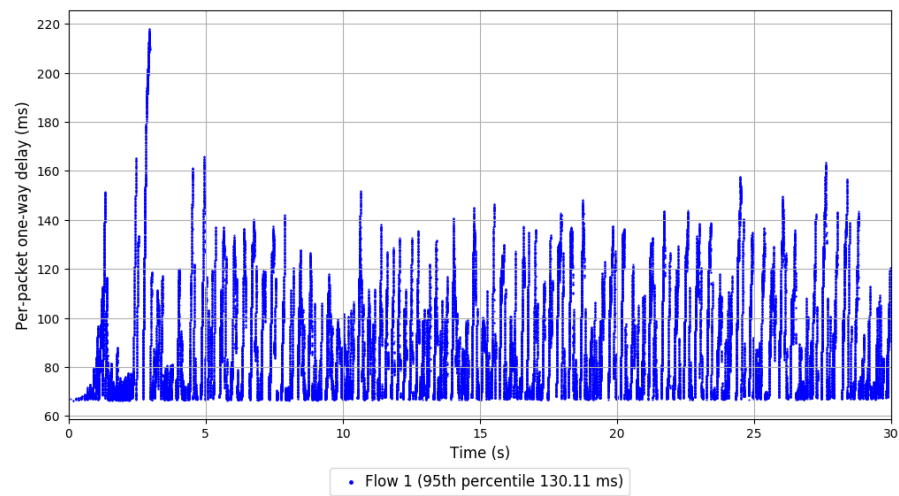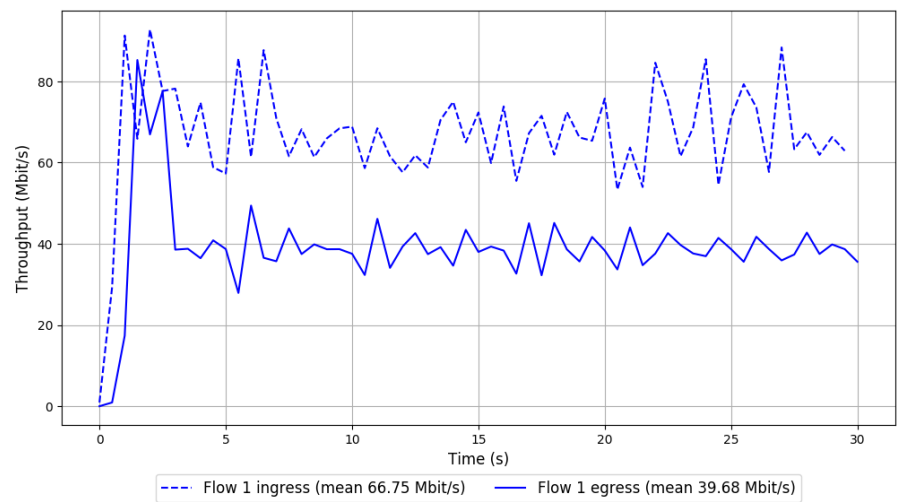
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-12-20 05:15:50
End at: 2018-12-20 05:16:20
Local clock offset: 9.204 ms
Remote clock offset: 51.952 ms


# Below is generated by plot.py at 2018-12-20 06:33:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 39.68 Mbit/s
95th percentile per-packet one-way delay: 130.106 ms
Loss rate: 40.75%
-- Flow 1:
Average throughput: 39.68 Mbit/s
95th percentile per-packet one-way delay: 130.106 ms
Loss rate: 40.75%
```
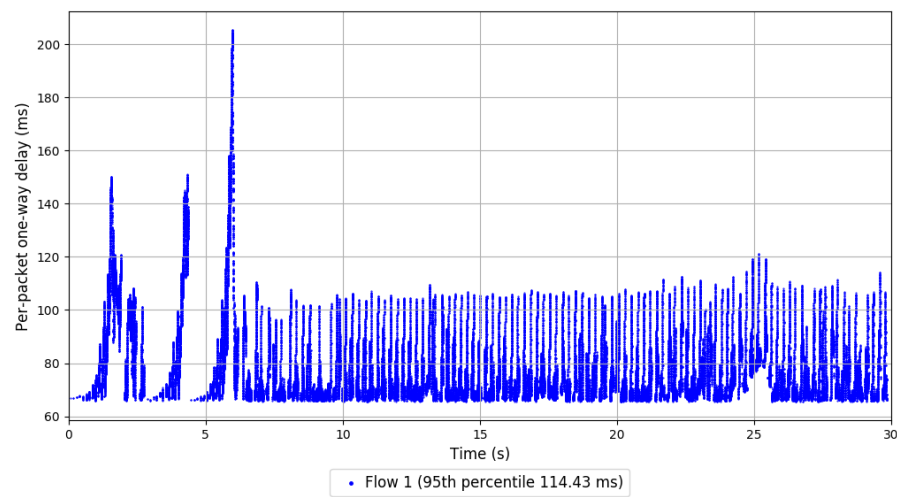
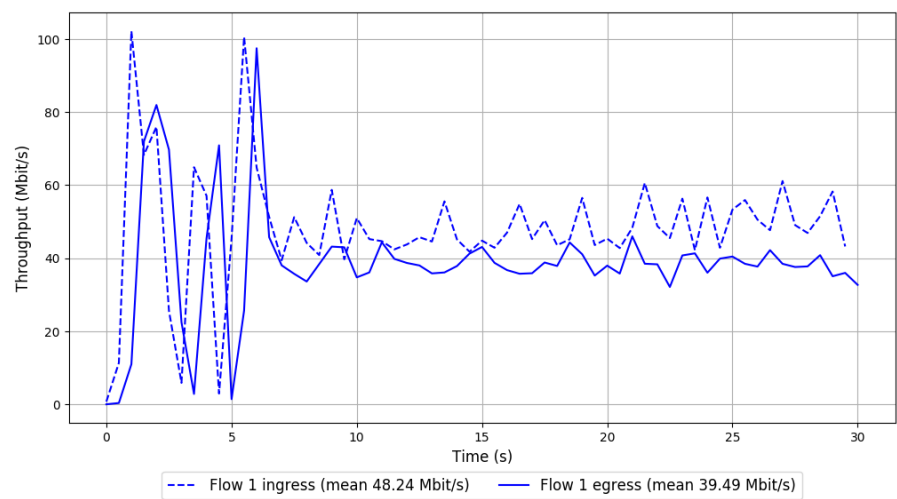## Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-12-20 05:38:00
End at: 2018-12-20 05:38:30
Local clock offset: 10.652 ms
Remote clock offset: 58.331 ms


# Below is generated by plot.py at 2018-12-20 06:33:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 39.49 Mbit/s
95th percentile per-packet one-way delay: 114.427 ms
Loss rate: 18.63%
-- Flow 1:
Average throughput: 39.49 Mbit/s
95th percentile per-packet one-way delay: 114.427 ms
Loss rate: 18.63%
```

Run 3: Report of Verus — Data Link

Flow 1 ingress (mean 48.24 Mbit/s) --- Flow 1 egress (mean 39.49 Mbit/s)
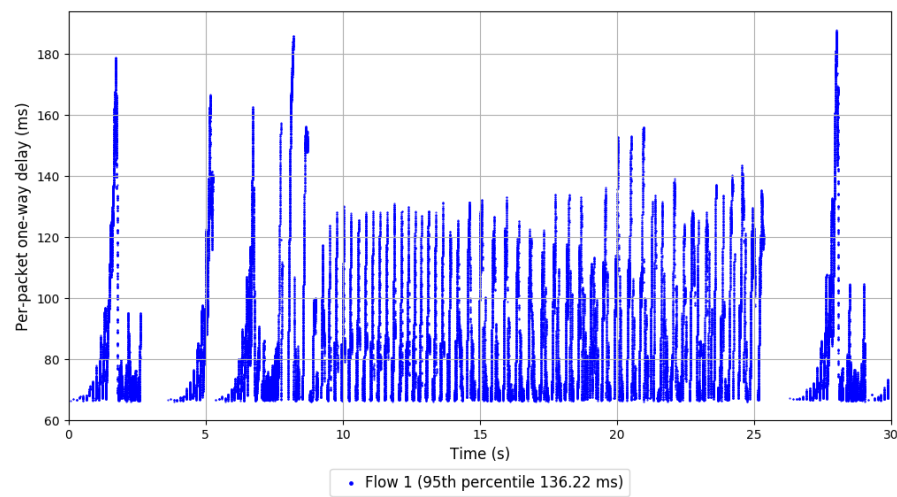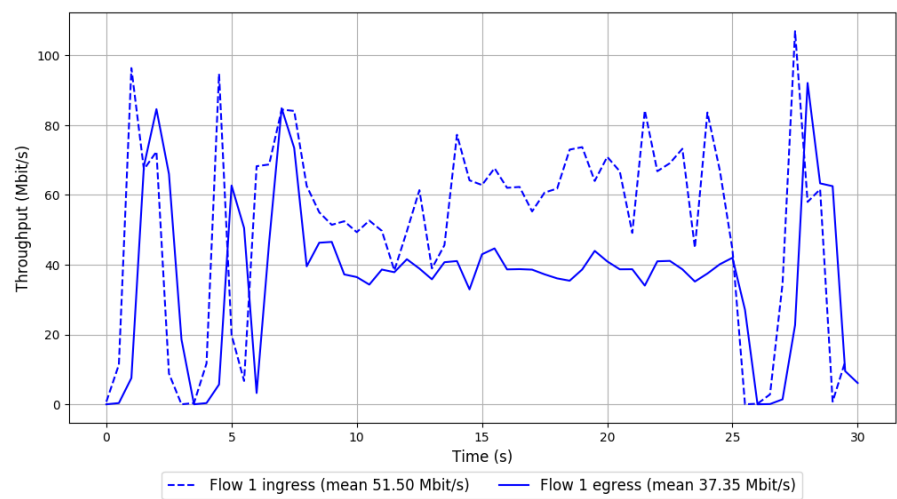

• Flow 1 (95th percentile 114.43 ms)

```
Run 4: Statistics of Verus

Start at: 2018-12-20 06:00:12
End at: 2018-12-20 06:00:42
Local clock offset: 10.916 ms
Remote clock offset: 55.369 ms


# Below is generated by plot.py at 2018-12-20 06:33:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 37.35 Mbit/s
95th percentile per-packet one-way delay: 136.225 ms
Loss rate: 27.76%
-- Flow 1:
Average throughput: 37.35 Mbit/s
95th percentile per-packet one-way delay: 136.225 ms
Loss rate: 27.76%
```
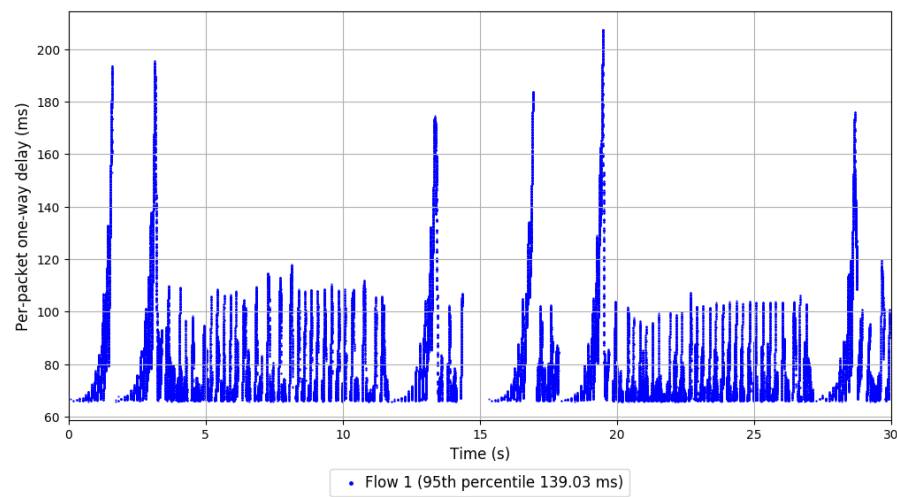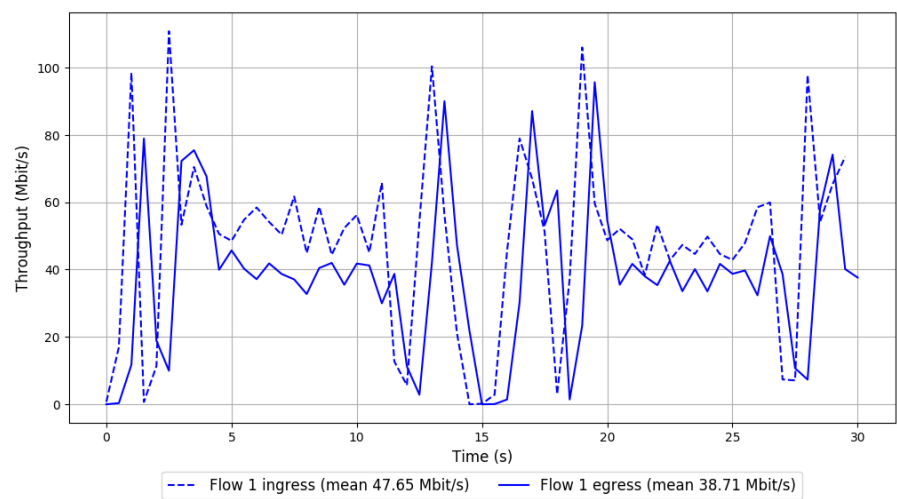
Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2018-12-20 06:22:32
End at: 2018-12-20 06:23:02
Local clock offset: 9.653 ms
Remote clock offset: 49.565 ms


# Below is generated by plot.py at 2018-12-20 06:33:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 38.71 Mbit/s
95th percentile per-packet one-way delay: 139.031 ms
Loss rate: 18.94%
-- Flow 1:
Average throughput: 38.71 Mbit/s
95th percentile per-packet one-way delay: 139.031 ms
Loss rate: 18.94%
```

Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-12-20 04:44:09
End at: 2018-12-20 04:44:39
Local clock offset: 8.271 ms
Remote clock offset: 7.338 ms


# Below is generated by plot.py at 2018-12-20 06:33:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 38.45 Mbit/s
95th percentile per-packet one-way delay: 68.257 ms
Loss rate: 7.93%
-- Flow 1:
Average throughput: 38.45 Mbit/s
95th percentile per-packet one-way delay: 68.257 ms
Loss rate: 7.93%
```
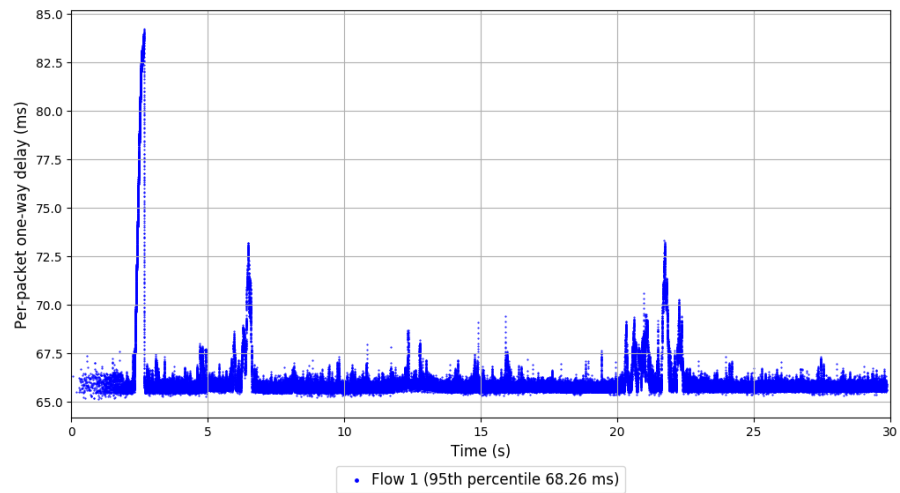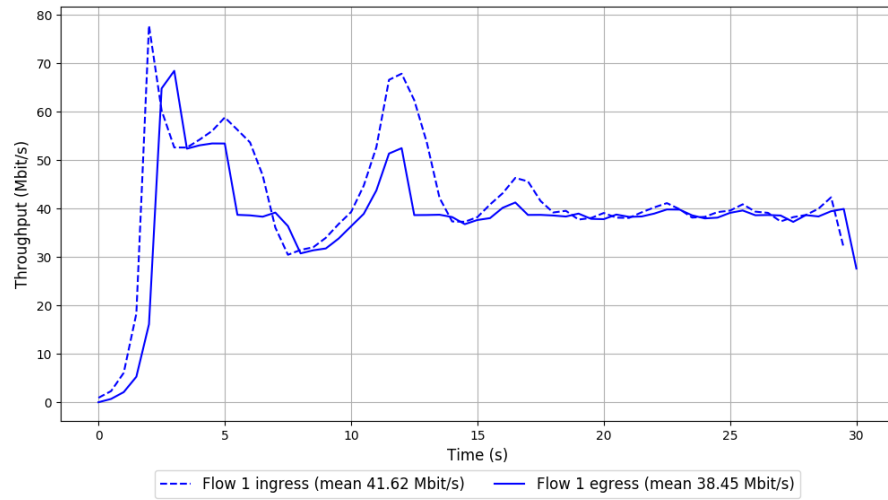
Run 1: Report of PCC-Vivace — Data Link

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-12-20 05:06:33
End at: 2018-12-20 05:07:03
Local clock offset: 7.161 ms
Remote clock offset: 37.71 ms


# Below is generated by plot.py at 2018-12-20 06:33:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 33.89 Mbit/s
95th percentile per-packet one-way delay: 75.262 ms
Loss rate: 13.26%
-- Flow 1:
Average throughput: 33.89 Mbit/s
95th percentile per-packet one-way delay: 75.262 ms
Loss rate: 13.26%
```
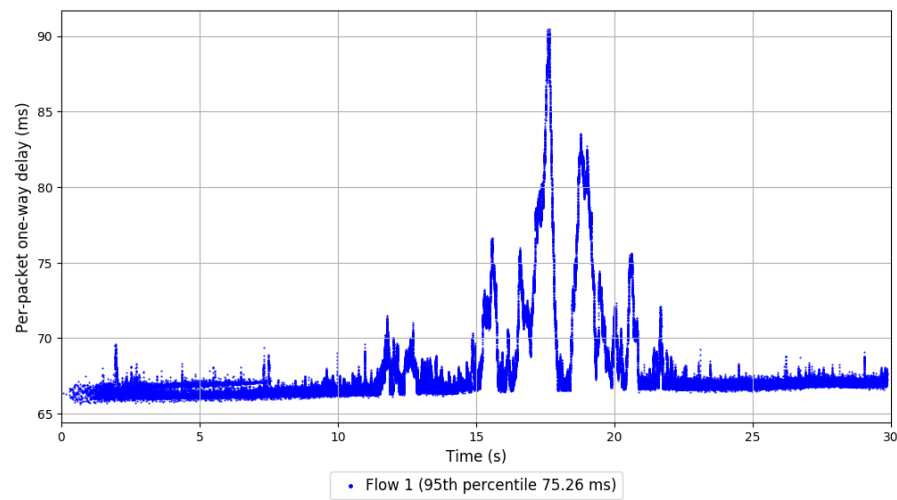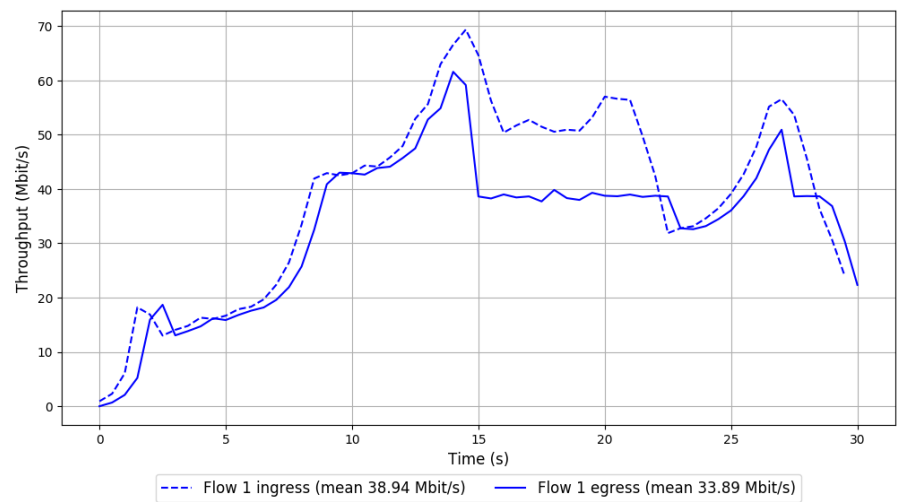
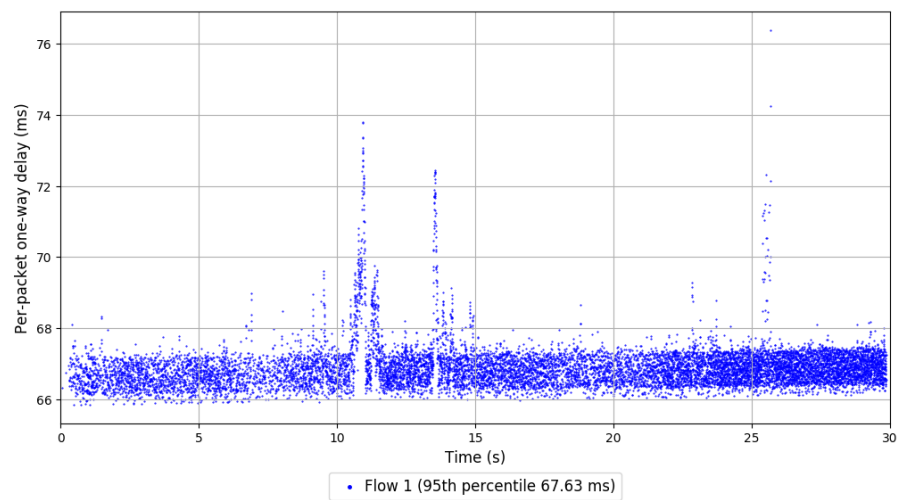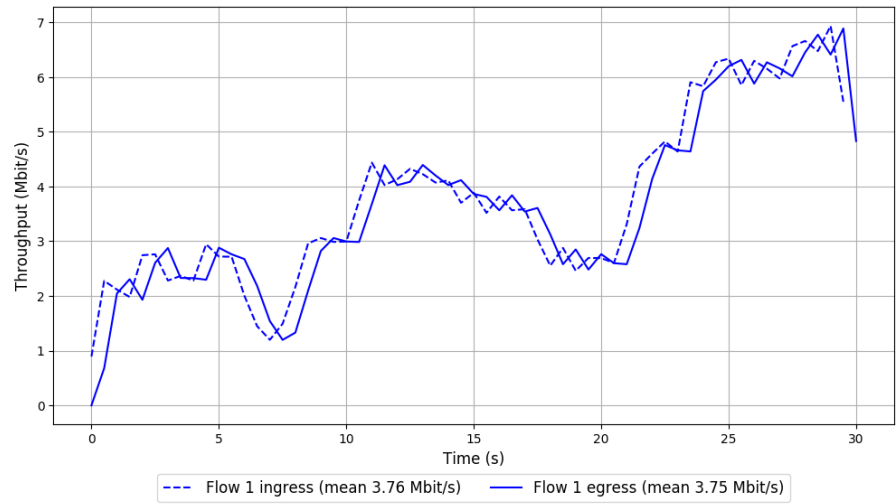Run 2: Report of PCC-Vivace — Data Link

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-12-20 05:28:44
End at: 2018-12-20 05:29:14
Local clock offset: 10.074 ms
Remote clock offset: 61.993 ms


# Below is generated by plot.py at 2018-12-20 06:33:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.75 Mbit/s
95th percentile per-packet one-way delay: 67.627 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 3.75 Mbit/s
95th percentile per-packet one-way delay: 67.627 ms
Loss rate: 0.72%
```

Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 3.76 Mbit/s) Flow 1 egress (mean 3.75 Mbit/s)
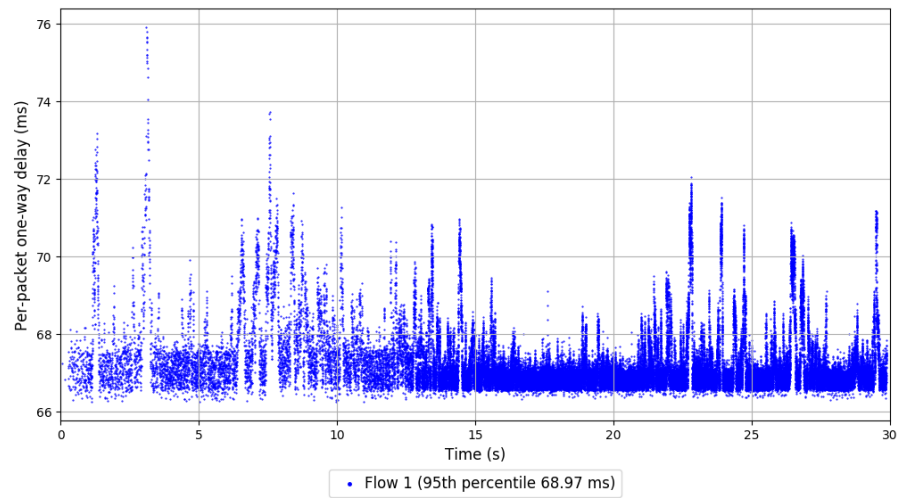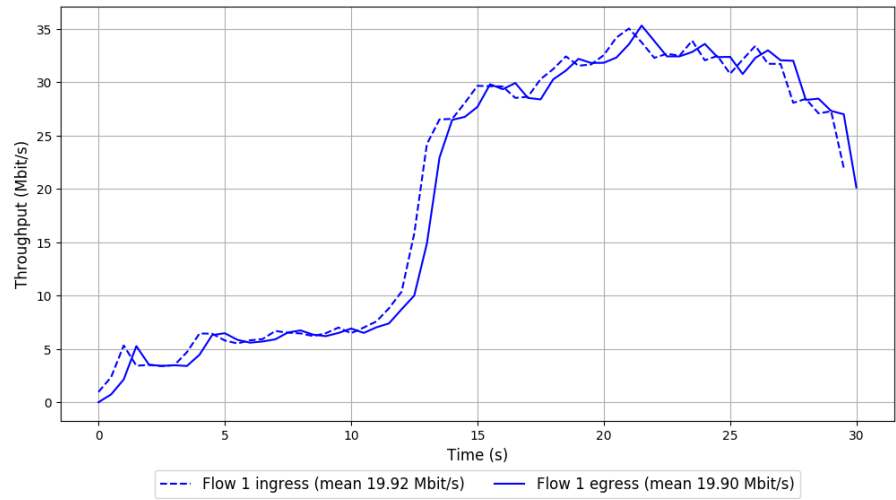

Flow 1 (95th percentile 67.63 ms)

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-12-20 05:50:52
End at: 2018-12-20 05:51:22
Local clock offset: 10.882 ms
Remote clock offset: 54.596 ms


# Below is generated by plot.py at 2018-12-20 06:33:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 19.90 Mbit/s
95th percentile per-packet one-way delay: 68.966 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 19.90 Mbit/s
95th percentile per-packet one-way delay: 68.966 ms
Loss rate: 0.47%
```

Run 4: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 19.92 Mbit/s) — — — Flow 1 egress (mean 19.90 Mbit/s)

Flow 1 (95th percentile 68.97 ms)

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-12-20 06:13:04
End at: 2018-12-20 06:13:34
Local clock offset: 9.619 ms
Remote clock offset: 51.035 ms


# Below is generated by plot.py at 2018-12-20 06:33:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.72 Mbit/s
95th percentile per-packet one-way delay: 67.981 ms
Loss rate: 0.87%
-- Flow 1:
Average throughput: 12.72 Mbit/s
95th percentile per-packet one-way delay: 67.981 ms
Loss rate: 0.87%
```
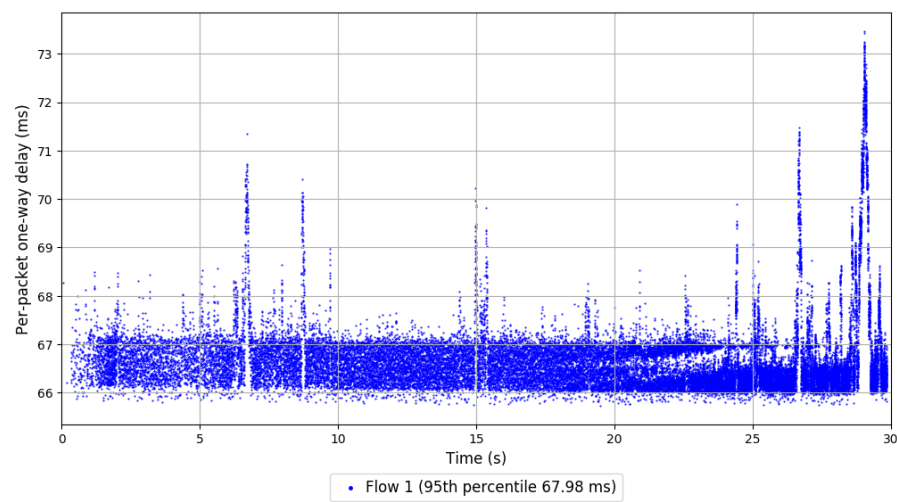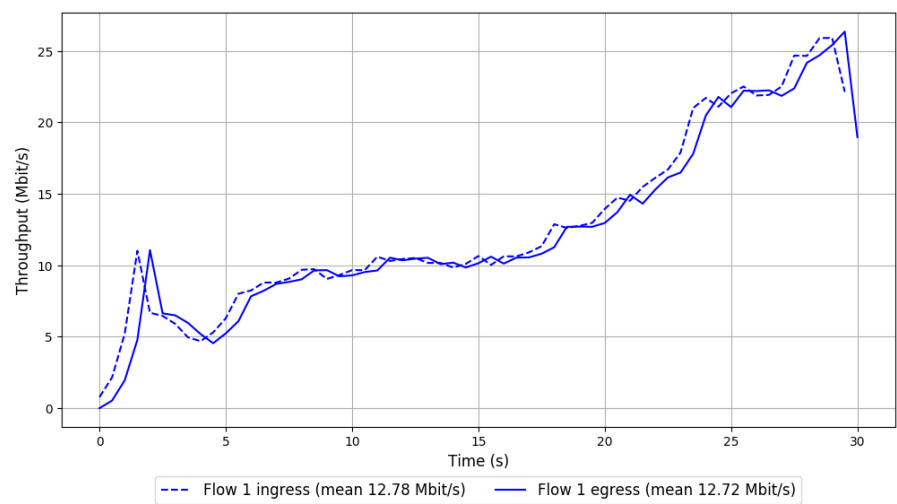
Run 5: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 12.78 Mbit/s)   Flow 1 egress (mean 12.72 Mbit/s)

Flow 1 (95th percentile 67.98 ms)
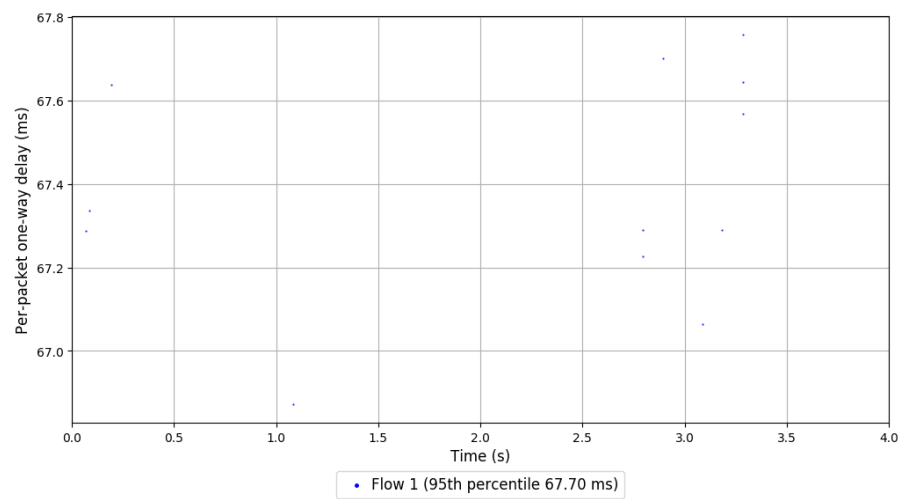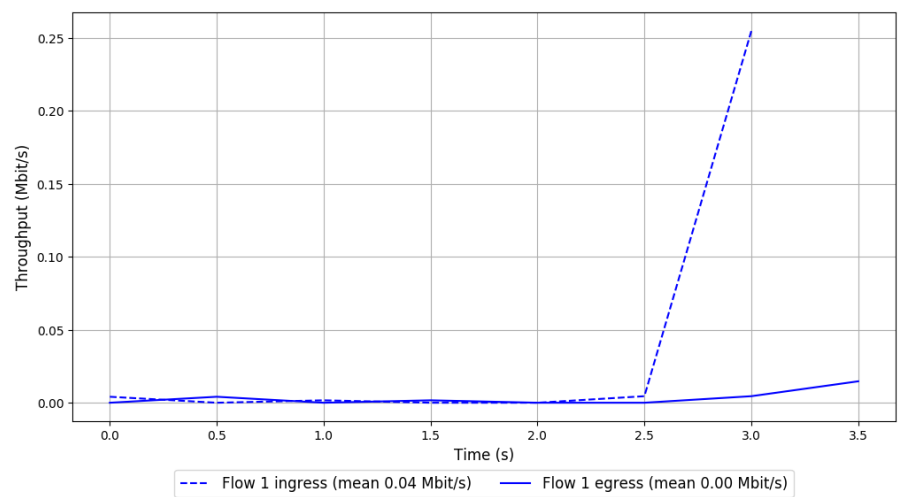
```
Run 1: Statistics of WebRTC media

Start at: 2018-12-20 04:47:40
End at: 2018-12-20 04:48:10
Local clock offset: 8.238 ms
Remote clock offset: 6.314 ms
```

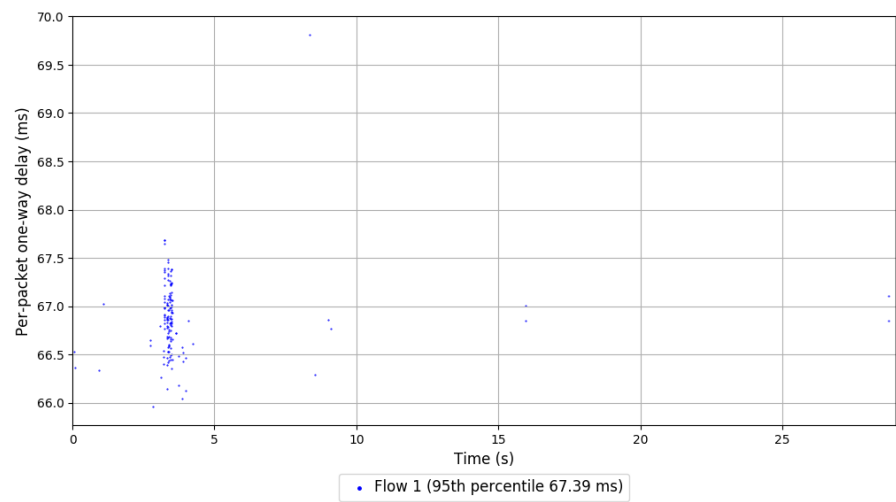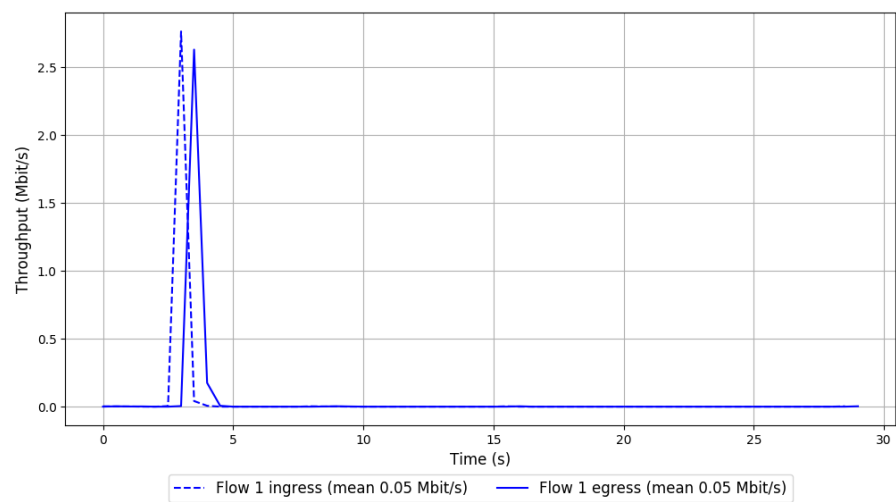Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-12-20 05:10:02
End at: 2018-12-20 05:10:32
Local clock offset: 8.764 ms
Remote clock offset: 44.889 ms


# Below is generated by plot.py at 2018-12-20 06:33:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 67.389 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 67.389 ms
Loss rate: 0.00%
```

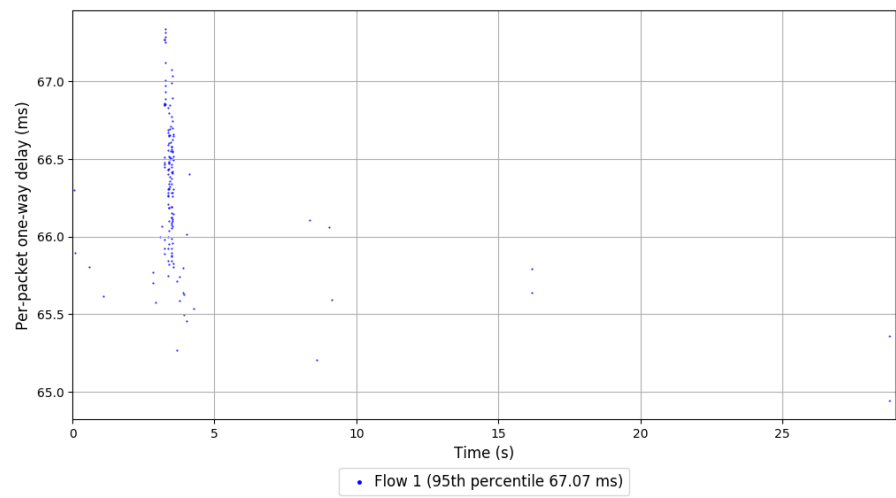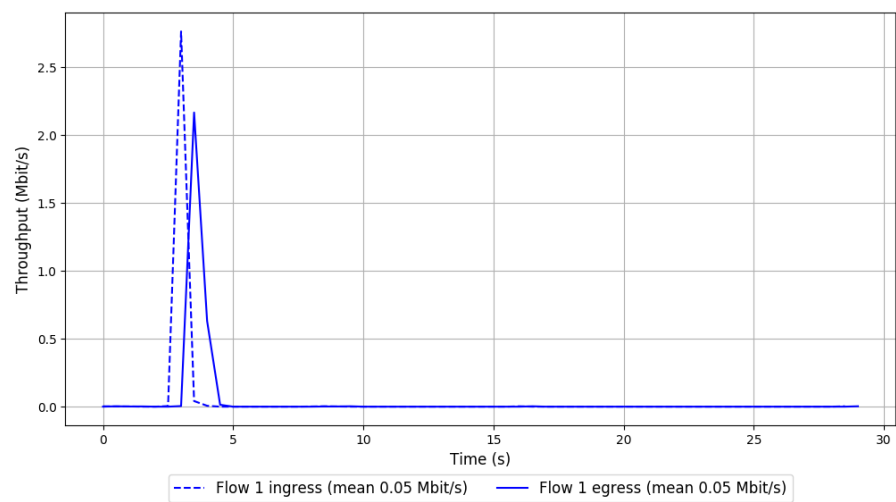Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-12-20 05:32:11
End at: 2018-12-20 05:32:41
Local clock offset: 10.257 ms
Remote clock offset: 63.563 ms


# Below is generated by plot.py at 2018-12-20 06:33:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 67.073 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 67.073 ms
Loss rate: 0.00%
```

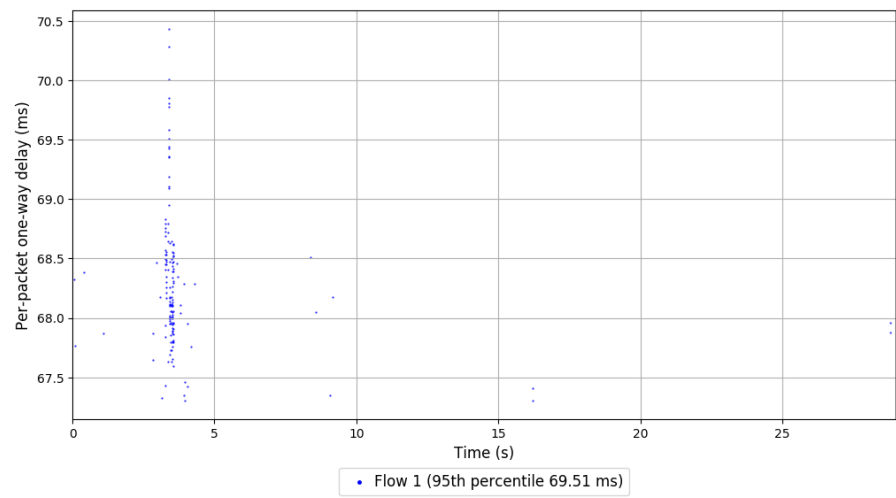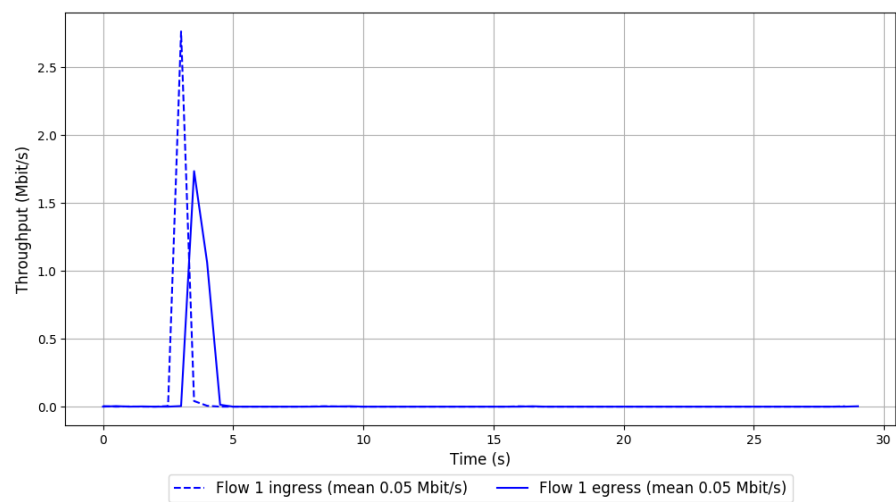Run 3: Report of WebRTC media — Data Link

```
Run 4: Statistics of WebRTC media

Start at: 2018-12-20 05:54:20
End at: 2018-12-20 05:54:50
Local clock offset: 10.844 ms
Remote clock offset: 53.714 ms


# Below is generated by plot.py at 2018-12-20 06:33:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 69.512 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 69.512 ms
Loss rate: 0.00%
```

Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2018-12-20 06:16:32
End at: 2018-12-20 06:17:02
Local clock offset: 9.877 ms
Remote clock offset: 49.43 ms


# Below is generated by plot.py at 2018-12-20 06:33:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 69.429 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 69.429 ms
Loss rate: 0.00%
```

Run 5: Report of WebRTC media — Data Link