Pantheon Report

Generated at 2018-09-07 01:55:02 (UTC).

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

Repeated the test of 18 congestion control schemes 5 times.

Each test lasted for 30 seconds running 1 flow.

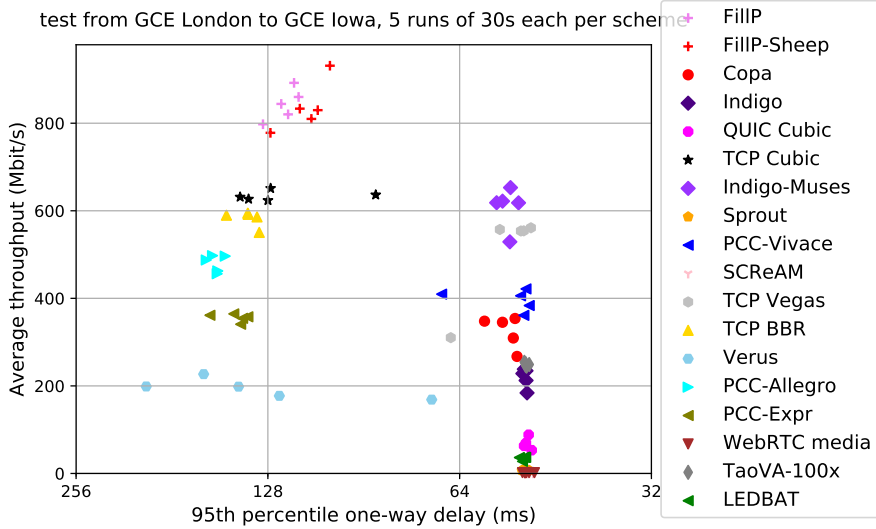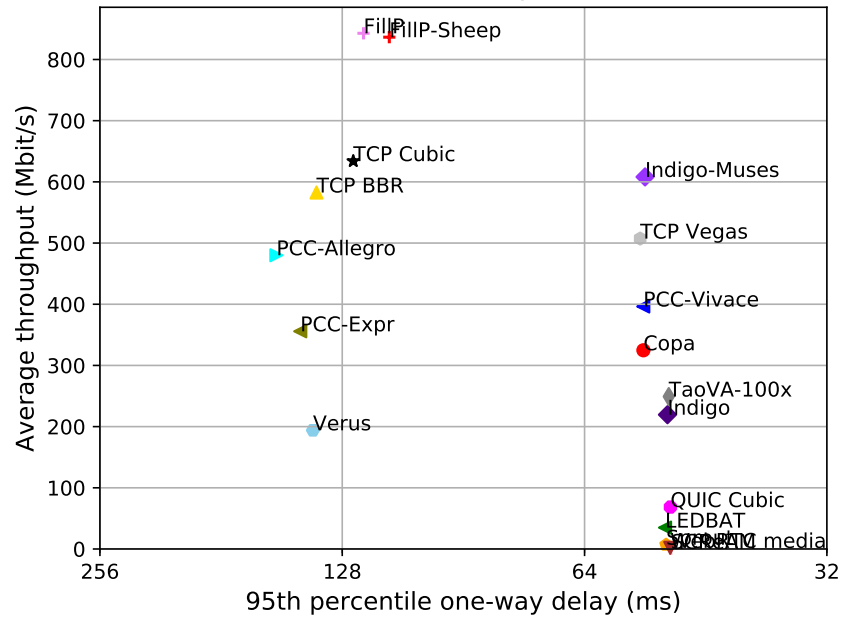NTP offsets were measured against `time.google.com` and have been applied to correct the timestamps in logs.

```
System info:
Linux 4.15.0-1018-gcp
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
net.ipv4.tcp_mem = 536870912 536870912 536870912

Git summary:
branch: muses @ f392ce15d580343f4432c3d7e068b3290f03eb4a
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ a28d20fb82a95a965a3da65fd1eb71b8994e9b84
third_party/pantheon-tunnel @ cbfce6db5ff5740dafe1771f813cd646339e1952
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
 M src/ScreamClient
 M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
 M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

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

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

scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	5	582.60	137.78	0.59
Copa	5	324.78	54.09	0.00
TCP Cubic	5	633.91	124.03	0.08
FillP	5	842.82	120.44	3.01
FillP-Sheep	5	836.46	111.88	1.21
Indigo	5	219.48	50.49	0.00
LEDBAT	5	34.95	50.84	0.00
Indigo-Muses	5	608.10	53.83	0.00
PCC-Allegro	5	480.06	154.53	3.26
PCC-Expr	5	355.77	144.34	3.88
QUIC Cubic	4	68.54	50.07	0.00
SCReAM	5	0.22	50.00	0.00
Sprout	5	6.97	50.68	0.00
TaoVA-100x	5	249.14	50.30	0.00
TCP Vegas	5	507.31	54.59	0.00
Verus	5	193.96	139.20	1.82
PCC-Vivace	5	396.32	54.11	0.01
WebRTC media	5	1.85	50.09	0.00

```
Run 1: Statistics of TCP BBR

Start at: 2018-09-06 22:28:53
End at: 2018-09-06 22:29:23
Local clock offset: 0.272 ms
Remote clock offset: -0.091 ms

# Below is generated by plot.py at 2018-09-07 00:34:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 550.60 Mbit/s
95th percentile per-packet one-way delay: 132.039 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 550.60 Mbit/s
95th percentile per-packet one-way delay: 132.039 ms
Loss rate: 0.47%
```
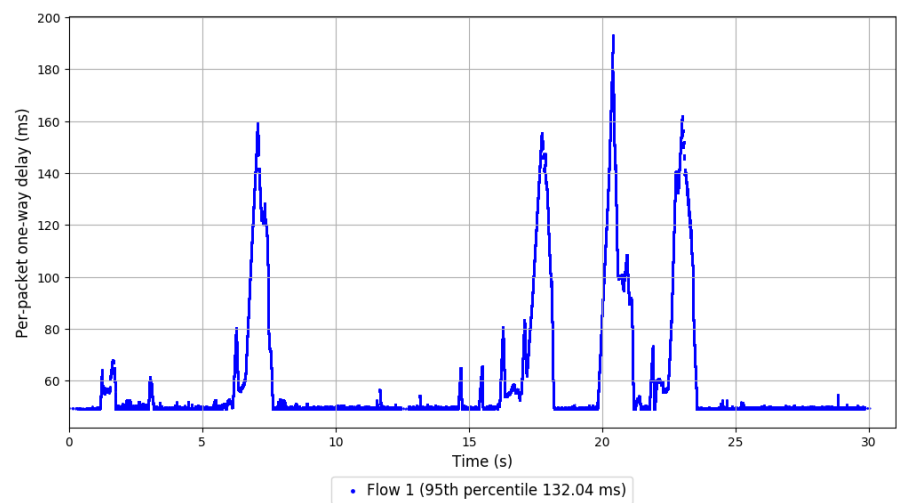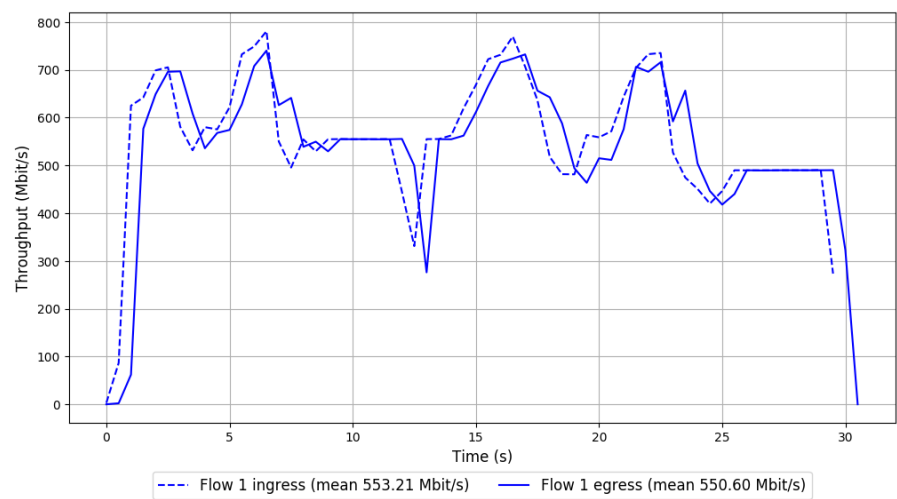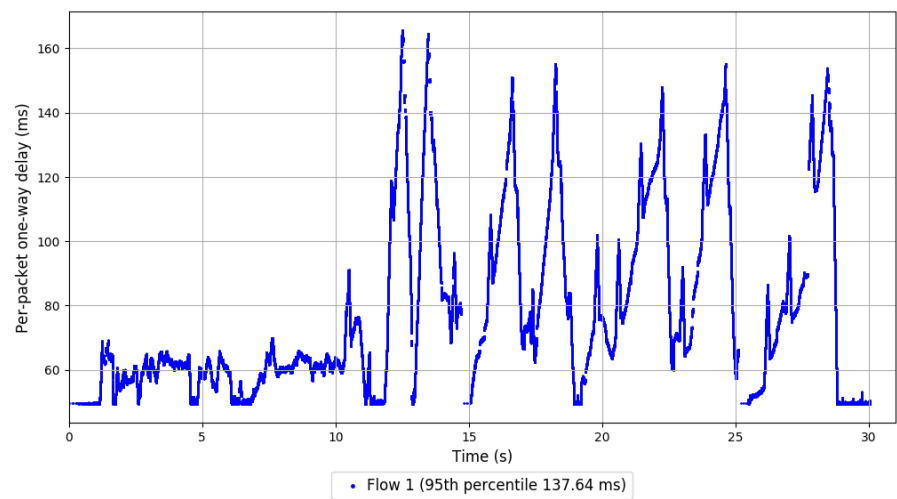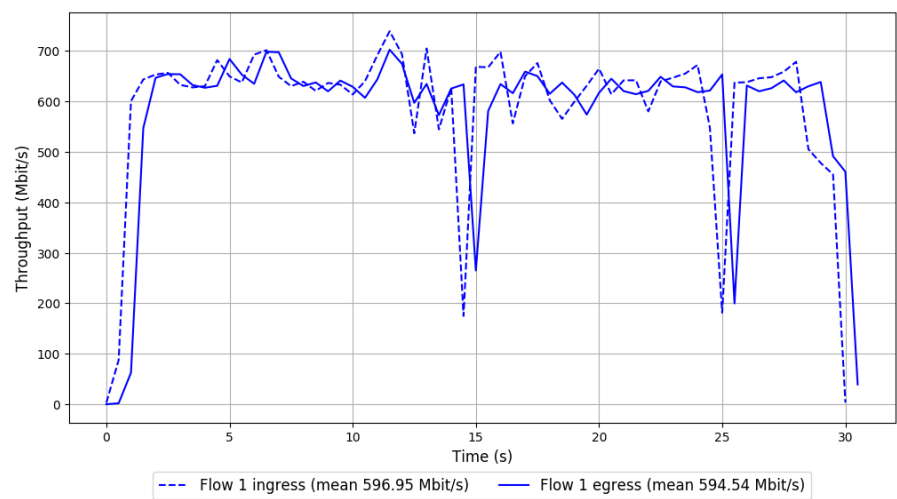
Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-09-06 22:54:44
End at: 2018-09-06 22:55:14
Local clock offset: -0.095 ms
Remote clock offset: -0.096 ms


# Below is generated by plot.py at 2018-09-07 00:35:19
# Datalink statistics
-- Total of 1 flow:
Average throughput: 594.54 Mbit/s
95th percentile per-packet one-way delay: 137.640 ms
Loss rate: 0.40%
-- Flow 1:
Average throughput: 594.54 Mbit/s
95th percentile per-packet one-way delay: 137.640 ms
Loss rate: 0.40%
```
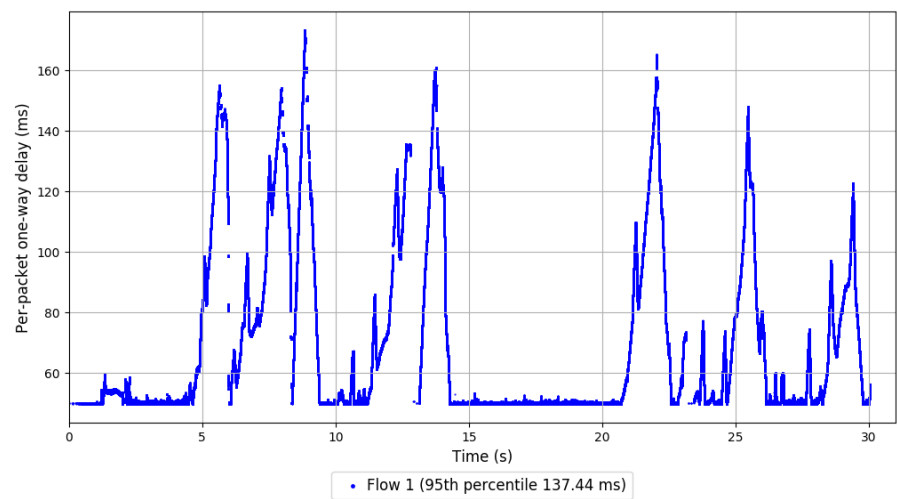
Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2018-09-06 23:20:20
End at: 2018-09-06 23:20:50
Local clock offset: 0.023 ms
Remote clock offset: -0.016 ms


# Below is generated by plot.py at 2018-09-07 00:35:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 591.92 Mbit/s
95th percentile per-packet one-way delay: 137.445 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 591.92 Mbit/s
95th percentile per-packet one-way delay: 137.445 ms
Loss rate: 0.58%
```
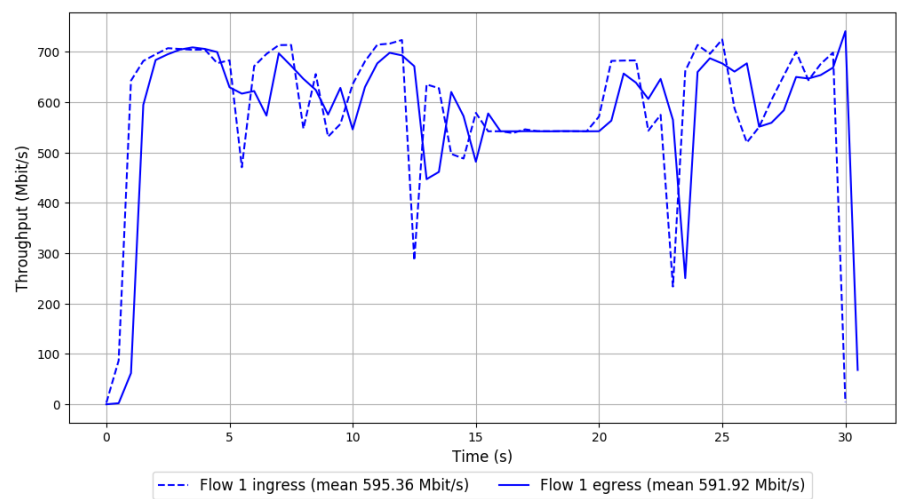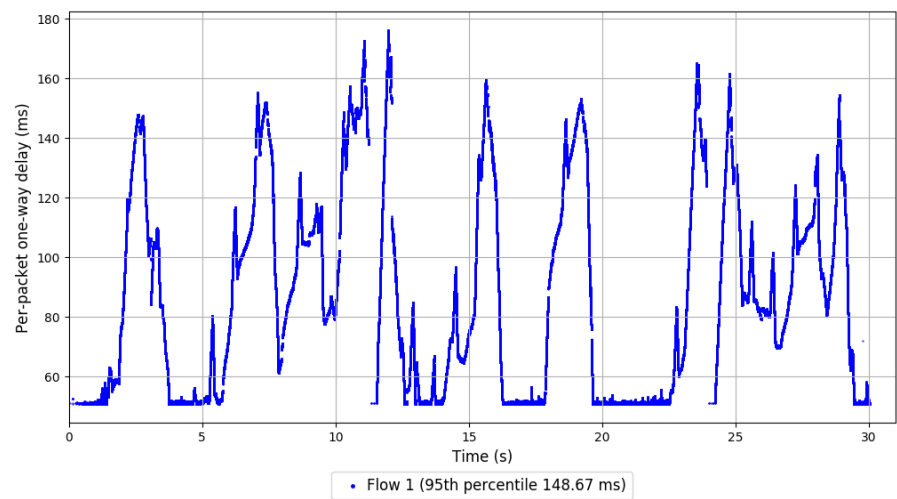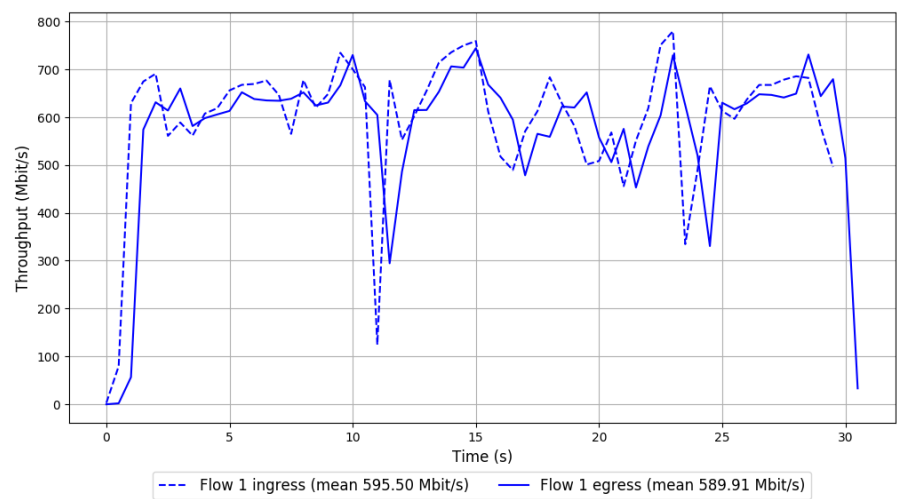
Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 595.36 Mbit/s)   Flow 1 egress (mean 591.92 Mbit/s)

• Flow 1 (95th percentile 137.44 ms)

```
Run 4: Statistics of TCP BBR

Start at: 2018-09-06 23:46:17
End at: 2018-09-06 23:46:47
Local clock offset: 0.244 ms
Remote clock offset: -0.009 ms


# Below is generated by plot.py at 2018-09-07 00:35:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 589.91 Mbit/s
95th percentile per-packet one-way delay: 148.674 ms
Loss rate: 0.94%
-- Flow 1:
Average throughput: 589.91 Mbit/s
95th percentile per-packet one-way delay: 148.674 ms
Loss rate: 0.94%
```
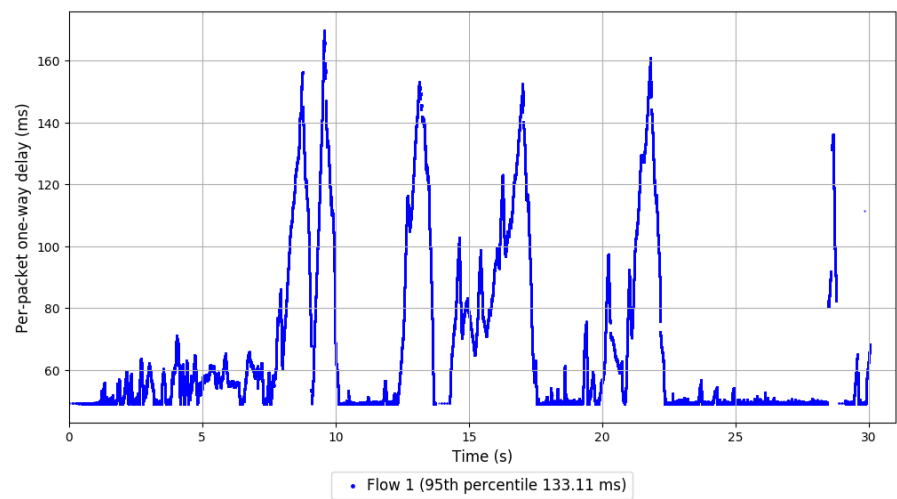
Run 4: Report of TCP BBR — Data Link

```
Run 5: Statistics of TCP BBR

Start at: 2018-09-07 00:12:12
End at: 2018-09-07 00:12:42
Local clock offset: -0.245 ms
Remote clock offset: 0.041 ms


# Below is generated by plot.py at 2018-09-07 00:35:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 586.01 Mbit/s
95th percentile per-packet one-way delay: 133.108 ms
Loss rate: 0.57%
-- Flow 1:
Average throughput: 586.01 Mbit/s
95th percentile per-packet one-way delay: 133.108 ms
Loss rate: 0.57%
```
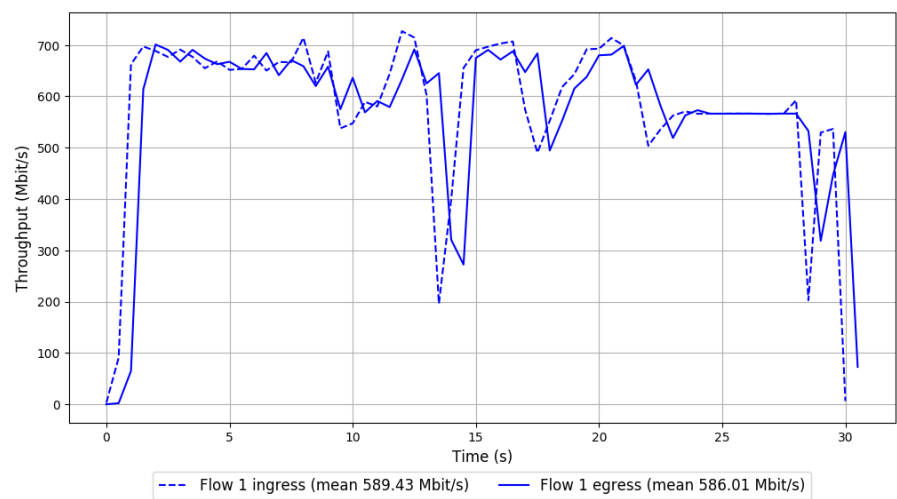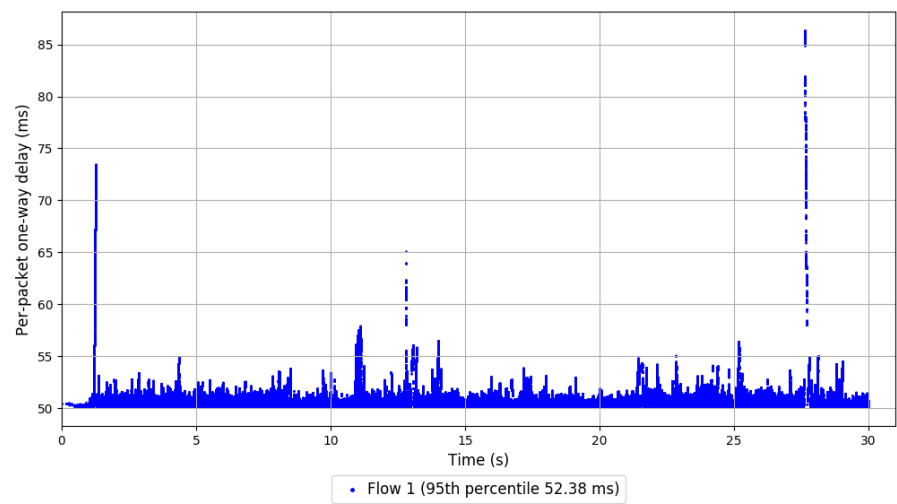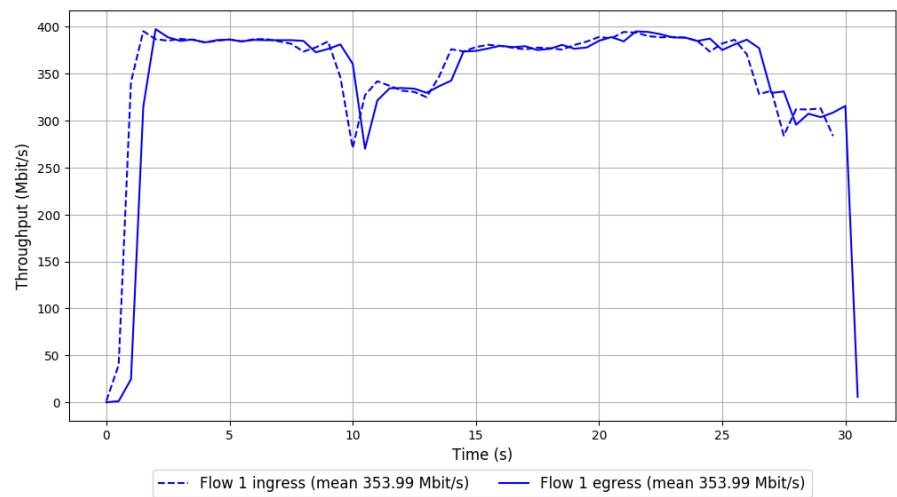
Run 5: Report of TCP BBR — Data Link

Flow 1 ingress (mean 589.43 Mbit/s) ——— Flow 1 egress (mean 586.01 Mbit/s)

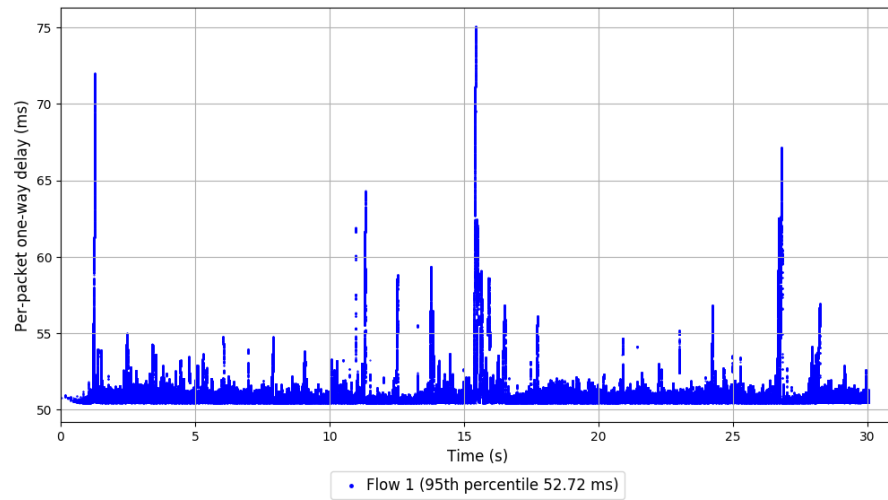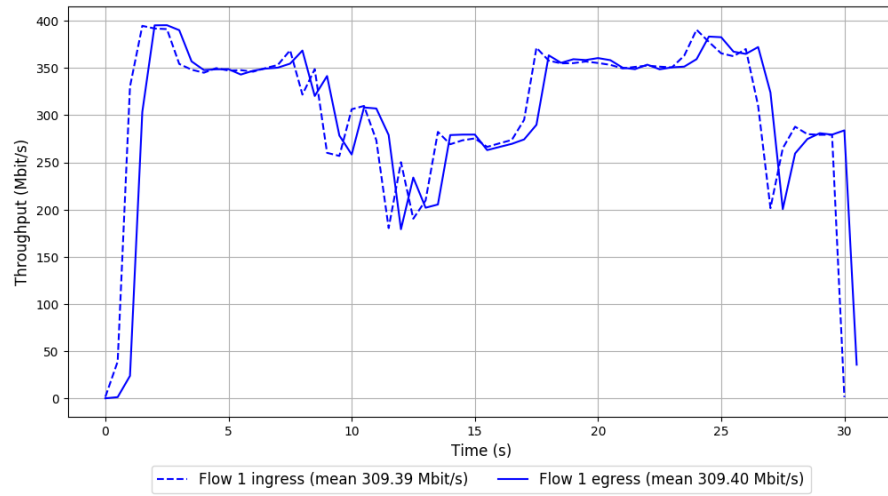

• Flow 1 (95th percentile 133.11 ms)

13

```
Run 1: Statistics of Copa

Start at: 2018-09-06 22:23:06
End at: 2018-09-06 22:23:36
Local clock offset: -0.002 ms
Remote clock offset: -0.086 ms


# Below is generated by plot.py at 2018-09-07 00:35:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 353.99 Mbit/s
95th percentile per-packet one-way delay: 52.384 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 353.99 Mbit/s
95th percentile per-packet one-way delay: 52.384 ms
Loss rate: 0.00%
```

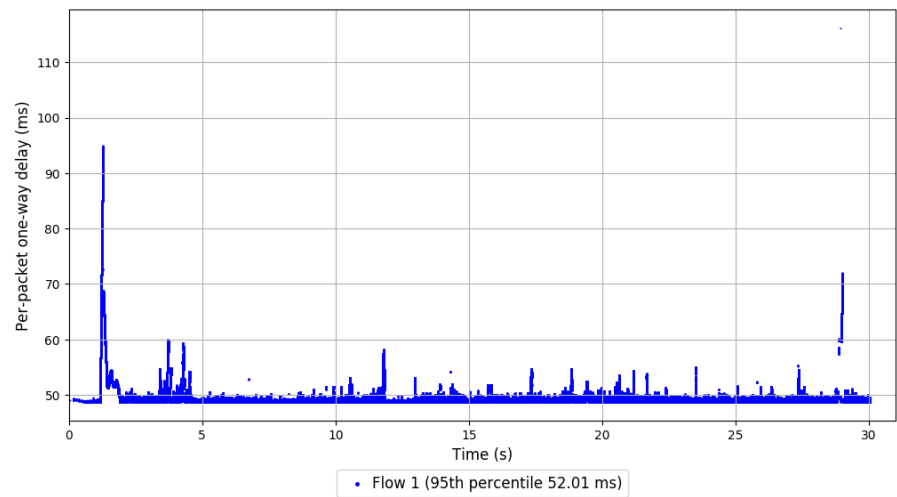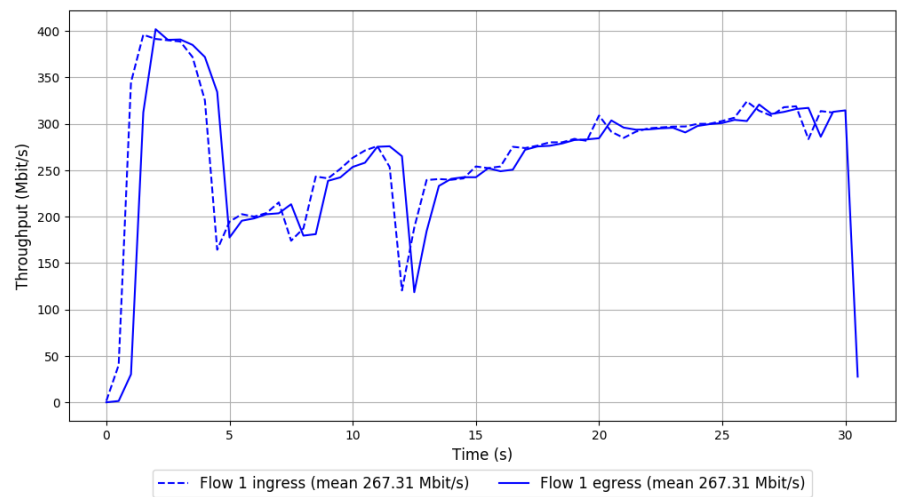Run 1: Report of Copa — Data Link

```
Run 2: Statistics of Copa

Start at: 2018-09-06 22:49:01
End at: 2018-09-06 22:49:31
Local clock offset: -0.091 ms
Remote clock offset: -0.073 ms


# Below is generated by plot.py at 2018-09-07 00:35:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 309.40 Mbit/s
95th percentile per-packet one-way delay: 52.715 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 309.40 Mbit/s
95th percentile per-packet one-way delay: 52.715 ms
Loss rate: 0.00%
```

Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2018-09-06 23:14:40
End at: 2018-09-06 23:15:10
Local clock offset: -0.109 ms
Remote clock offset: -0.063 ms


# Below is generated by plot.py at 2018-09-07 00:35:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 267.31 Mbit/s
95th percentile per-packet one-way delay: 52.013 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 267.31 Mbit/s
95th percentile per-packet one-way delay: 52.013 ms
Loss rate: 0.00%
```

Run 3: Report of Copa — Data Link

```
Run 4: Statistics of Copa

Start at: 2018-09-06 23:40:26
End at: 2018-09-06 23:40:56
Local clock offset: 0.226 ms
Remote clock offset: 0.003 ms

# Below is generated by plot.py at 2018-09-07 00:44:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 345.34 Mbit/s
95th percentile per-packet one-way delay: 54.823 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 345.34 Mbit/s
95th percentile per-packet one-way delay: 54.823 ms
Loss rate: 0.00%
```
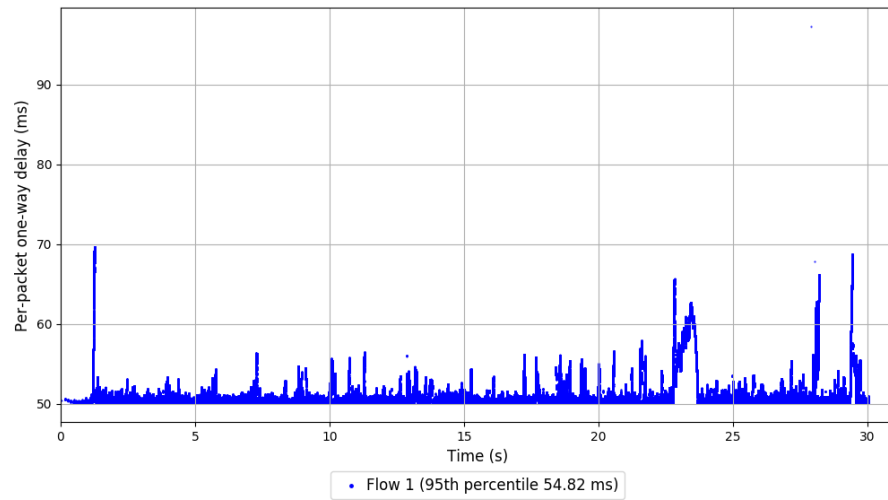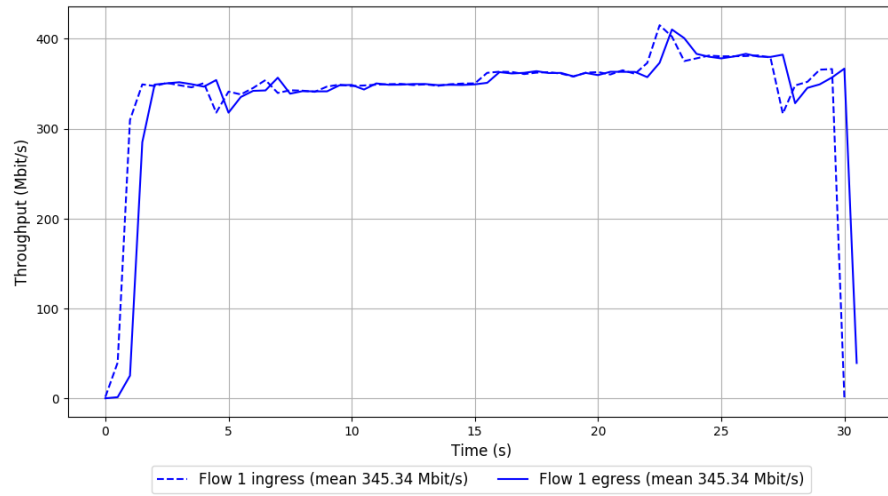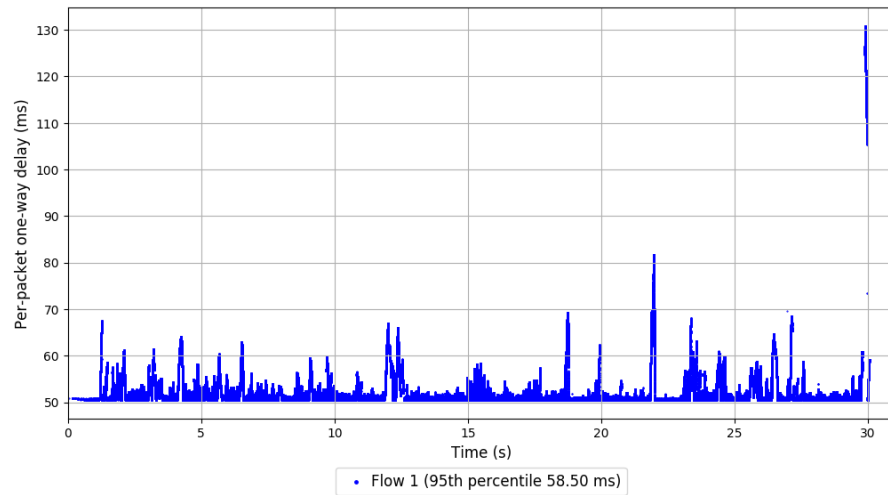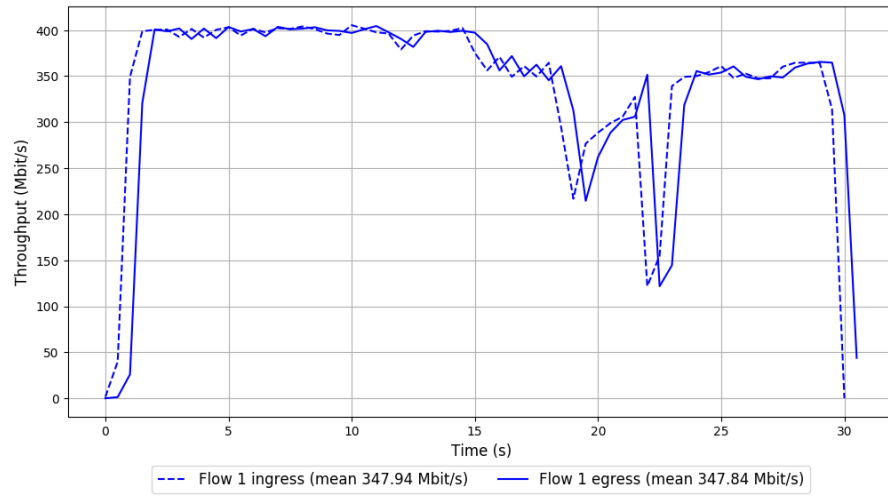
Run 4: Report of Copa — Data Link

Flow 1 ingress (mean 345.34 Mbit/s)   Flow 1 egress (mean 345.34 Mbit/s)

• Flow 1 (95th percentile 54.82 ms)

```
Run 5: Statistics of Copa

Start at: 2018-09-07 00:06:22
End at: 2018-09-07 00:06:52
Local clock offset: 0.131 ms
Remote clock offset: 0.075 ms


# Below is generated by plot.py at 2018-09-07 00:45:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 347.84 Mbit/s
95th percentile per-packet one-way delay: 58.498 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 347.84 Mbit/s
95th percentile per-packet one-way delay: 58.498 ms
Loss rate: 0.00%
```

Run 5: Report of Copa — Data Link

```
Run 1: Statistics of TCP Cubic

Start at: 2018-09-06 22:06:16
End at: 2018-09-06 22:06:46
Local clock offset: 0.137 ms
Remote clock offset: 0.066 ms


# Below is generated by plot.py at 2018-09-07 00:45:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 651.24 Mbit/s
95th percentile per-packet one-way delay: 126.738 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 651.24 Mbit/s
95th percentile per-packet one-way delay: 126.738 ms
Loss rate: 0.17%
```
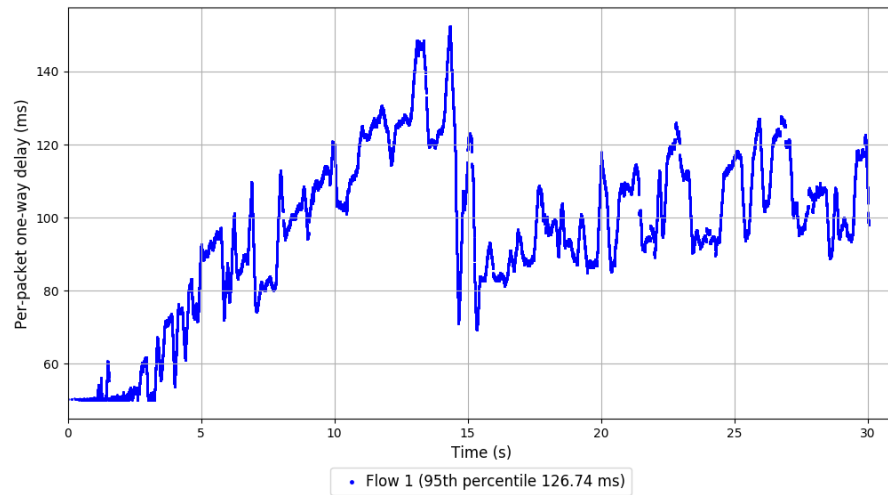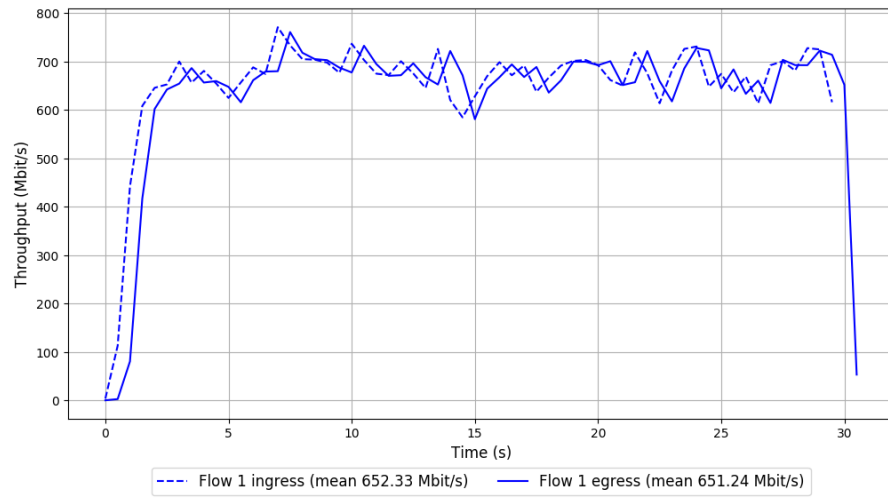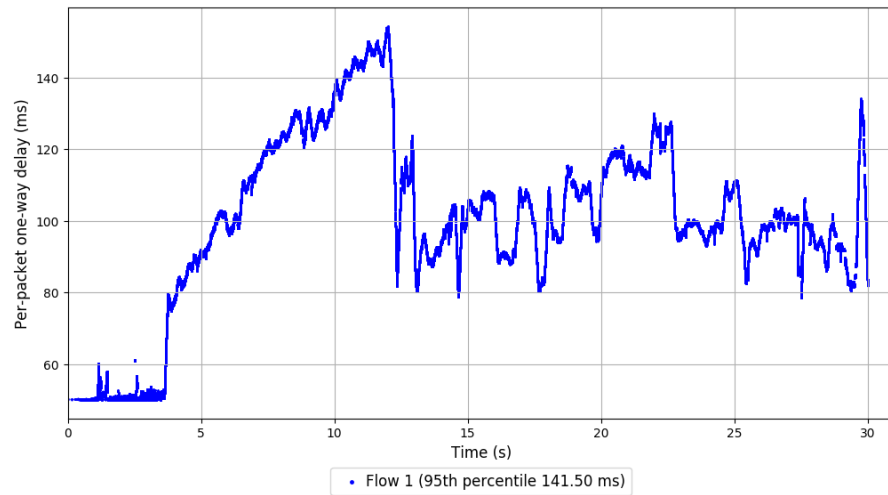
Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 652.33 Mbit/s) — Flow 1 egress (mean 651.24 Mbit/s)
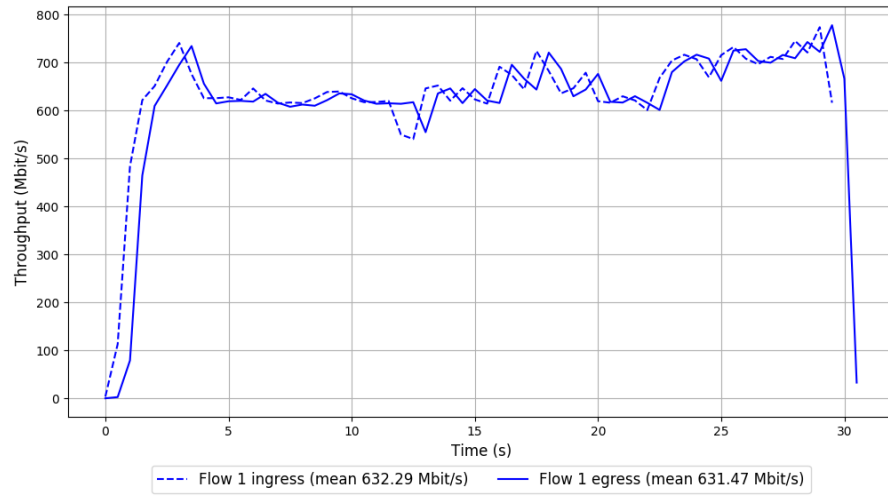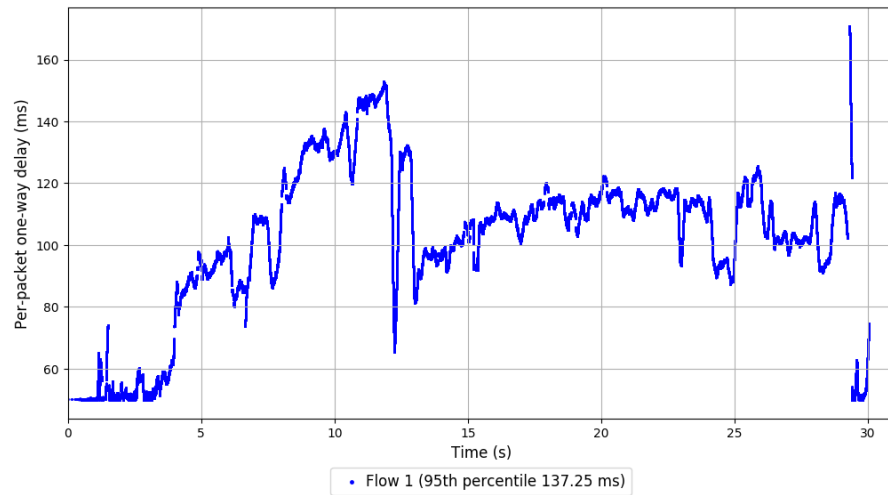

• Flow 1 (95th percentile 126.74 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2018-09-06 22:32:05
End at: 2018-09-06 22:32:35
Local clock offset: 0.299 ms
Remote clock offset: -0.136 ms


# Below is generated by plot.py at 2018-09-07 00:45:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 631.47 Mbit/s
95th percentile per-packet one-way delay: 141.495 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 631.47 Mbit/s
95th percentile per-packet one-way delay: 141.495 ms
Loss rate: 0.13%
```

Run 2: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 632.29 Mbit/s) — — — Flow 1 egress (mean 631.47 Mbit/s)
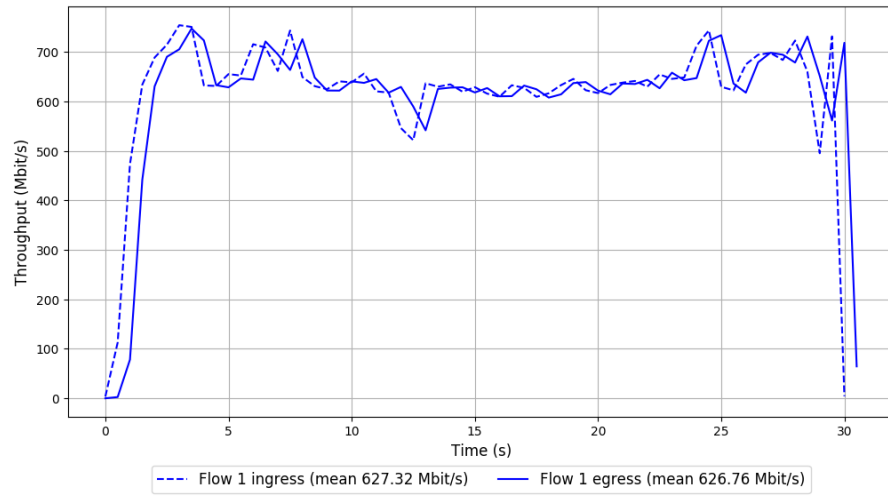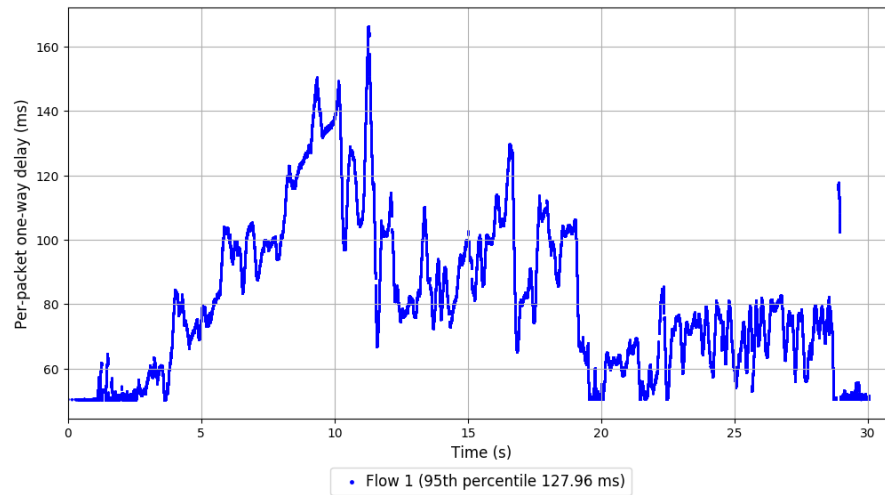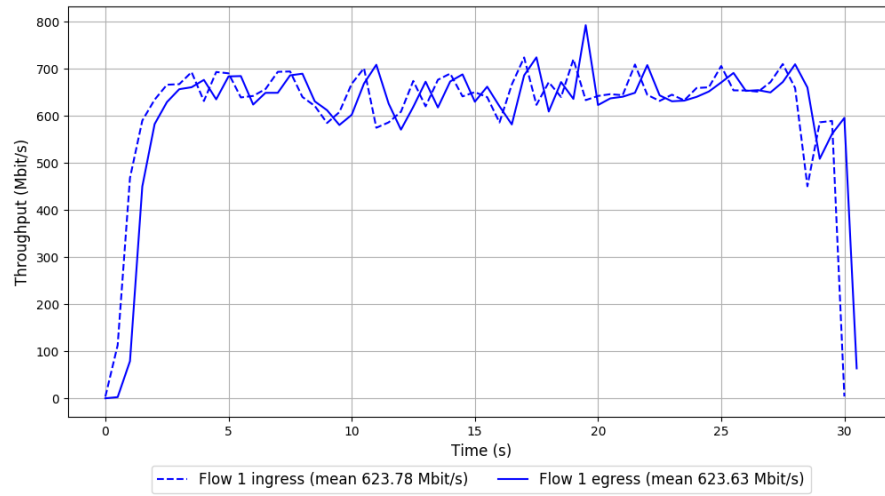

Flow 1 (95th percentile 141.50 ms)

```
Run 3: Statistics of TCP Cubic

Start at: 2018-09-06 22:57:58
End at: 2018-09-06 22:58:28
Local clock offset: 0.244 ms
Remote clock offset: -0.054 ms


# Below is generated by plot.py at 2018-09-07 00:45:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 626.76 Mbit/s
95th percentile per-packet one-way delay: 137.253 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 626.76 Mbit/s
95th percentile per-packet one-way delay: 137.253 ms
Loss rate: 0.09%
```

Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 627.32 Mbit/s)   Flow 1 egress (mean 626.76 Mbit/s)

Flow 1 (95th percentile 137.25 ms)

```
Run 4: Statistics of TCP Cubic

Start at: 2018-09-06 23:23:32
End at: 2018-09-06 23:24:02
Local clock offset: 0.085 ms
Remote clock offset: -0.032 ms


# Below is generated by plot.py at 2018-09-07 00:45:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 623.63 Mbit/s
95th percentile per-packet one-way delay: 127.962 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 623.63 Mbit/s
95th percentile per-packet one-way delay: 127.962 ms
Loss rate: 0.02%
```

Run 4: Report of TCP Cubic — Data Link

```
Run 5: Statistics of TCP Cubic

Start at: 2018-09-06 23:49:30
End at: 2018-09-06 23:50:00
Local clock offset: 0.2 ms
Remote clock offset: 0.016 ms


# Below is generated by plot.py at 2018-09-07 00:45:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 636.45 Mbit/s
95th percentile per-packet one-way delay: 86.679 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 636.45 Mbit/s
95th percentile per-packet one-way delay: 86.679 ms
Loss rate: 0.01%
```
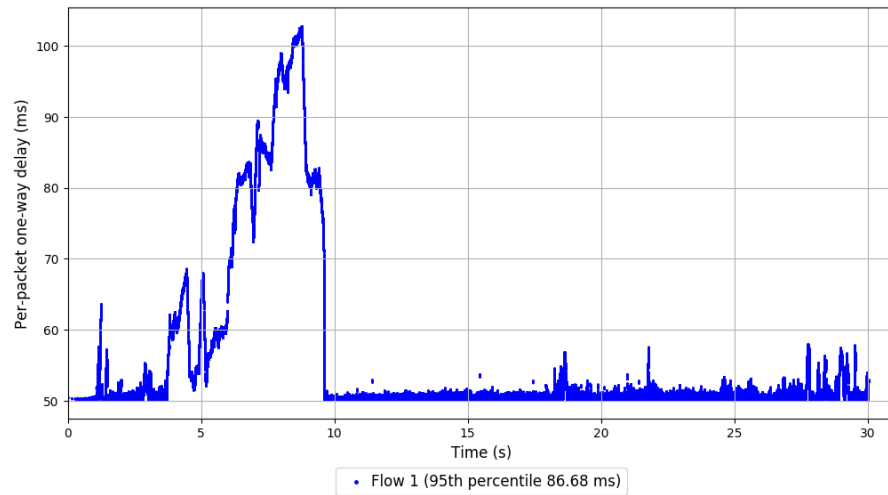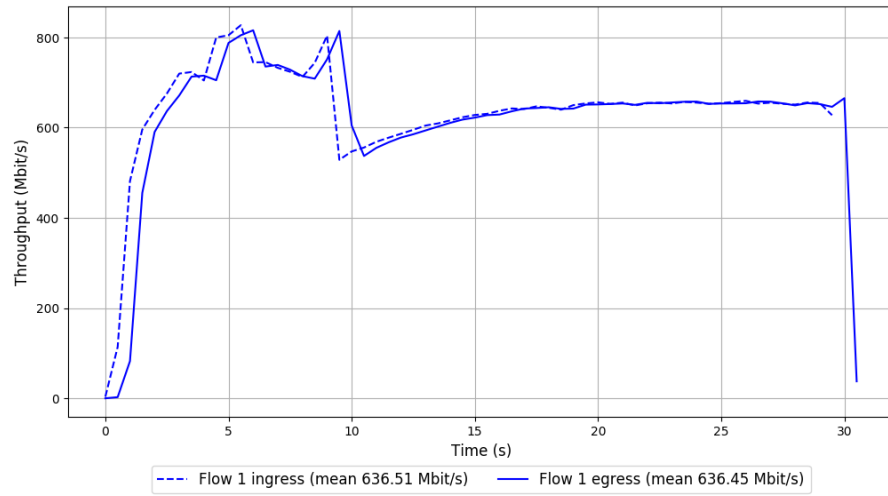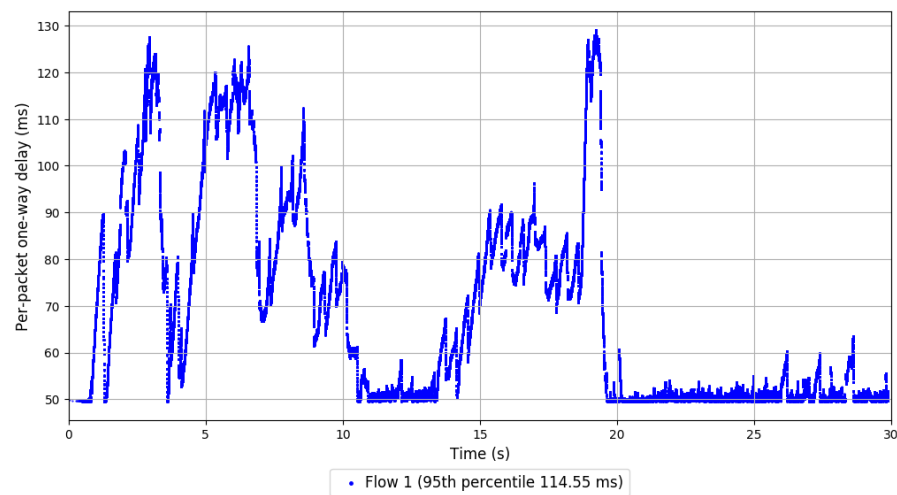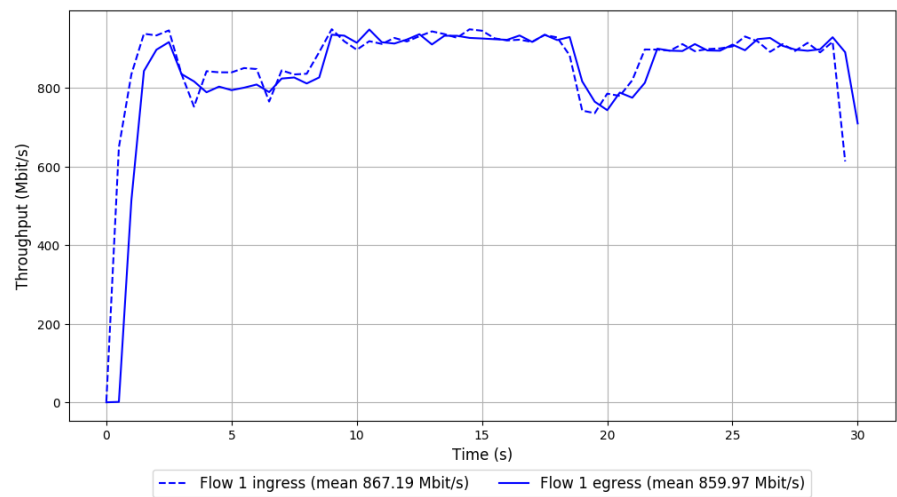
Run 5: Report of TCP Cubic — Data Link

```
Run 1: Statistics of FillP

Start at: 2018-09-06 22:16:16
End at: 2018-09-06 22:16:46
Local clock offset: 0.007 ms
Remote clock offset: -0.029 ms


# Below is generated by plot.py at 2018-09-07 00:52:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 859.97 Mbit/s
95th percentile per-packet one-way delay: 114.547 ms
Loss rate: 0.83%
-- Flow 1:
Average throughput: 859.97 Mbit/s
95th percentile per-packet one-way delay: 114.547 ms
Loss rate: 0.83%
```
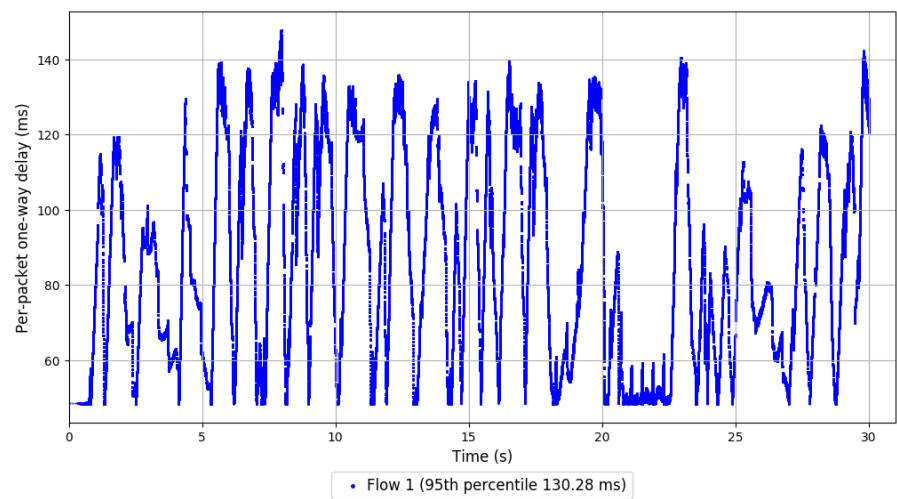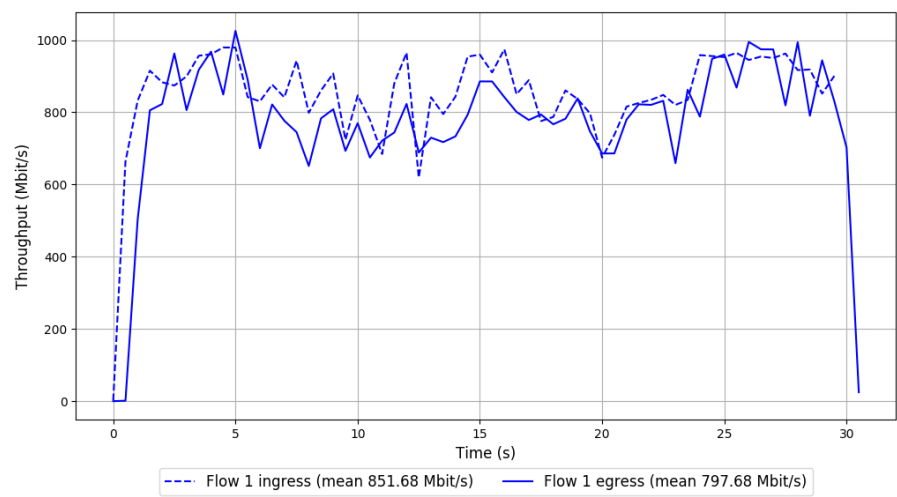
Run 1: Report of FillP — Data Link

Flow 1 ingress (mean 867.19 Mbit/s)   Flow 1 egress (mean 859.97 Mbit/s)

• Flow 1 (95th percentile 114.55 ms)

```
Run 2: Statistics of FillP

Start at: 2018-09-06 22:42:11
End at: 2018-09-06 22:42:41
Local clock offset: 0.25 ms
Remote clock offset: -0.12 ms


# Below is generated by plot.py at 2018-09-07 01:01:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 797.68 Mbit/s
95th percentile per-packet one-way delay: 130.282 ms
Loss rate: 6.33%
-- Flow 1:
Average throughput: 797.68 Mbit/s
95th percentile per-packet one-way delay: 130.282 ms
Loss rate: 6.33%
```

Run 2: Report of FillP — Data Link

```
Run 3: Statistics of FillP

Start at: 2018-09-06 23:07:47
End at: 2018-09-06 23:08:17
Local clock offset: -0.469 ms
Remote clock offset: -0.09 ms


# Below is generated by plot.py at 2018-09-07 01:01:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 820.22 Mbit/s
95th percentile per-packet one-way delay: 118.975 ms
Loss rate: 2.55%
-- Flow 1:
Average throughput: 820.22 Mbit/s
95th percentile per-packet one-way delay: 118.975 ms
Loss rate: 2.55%
```
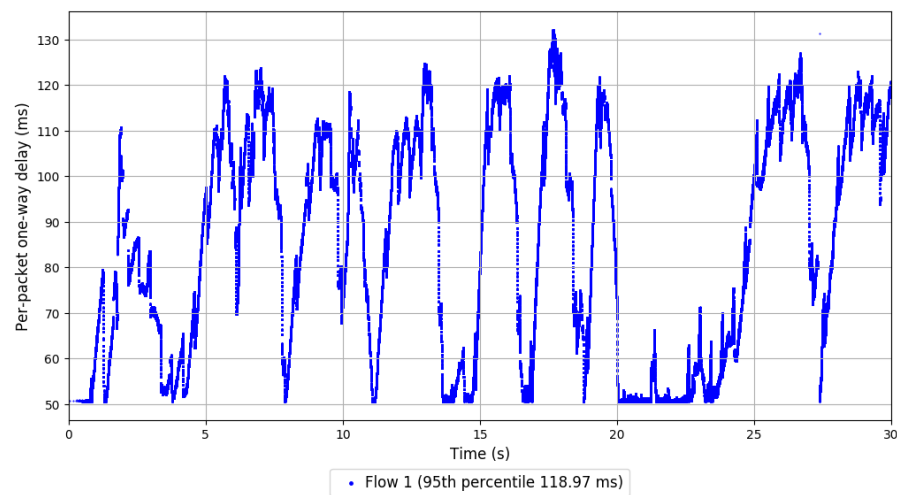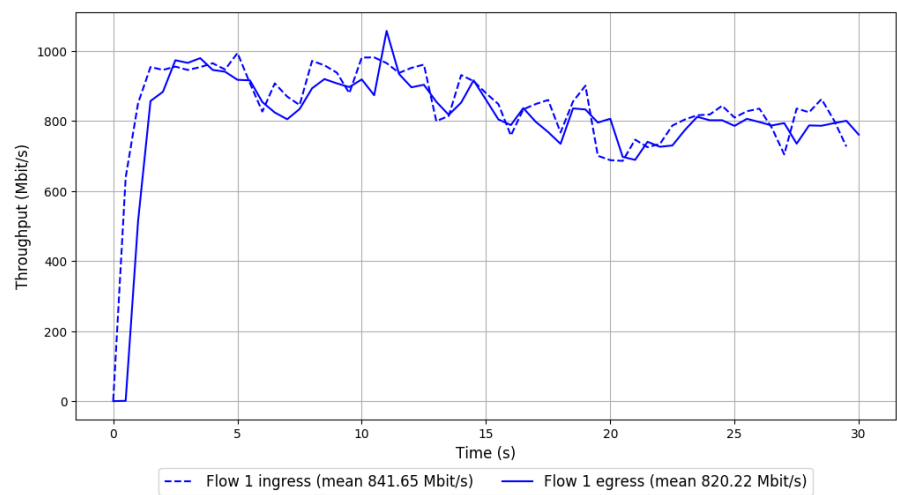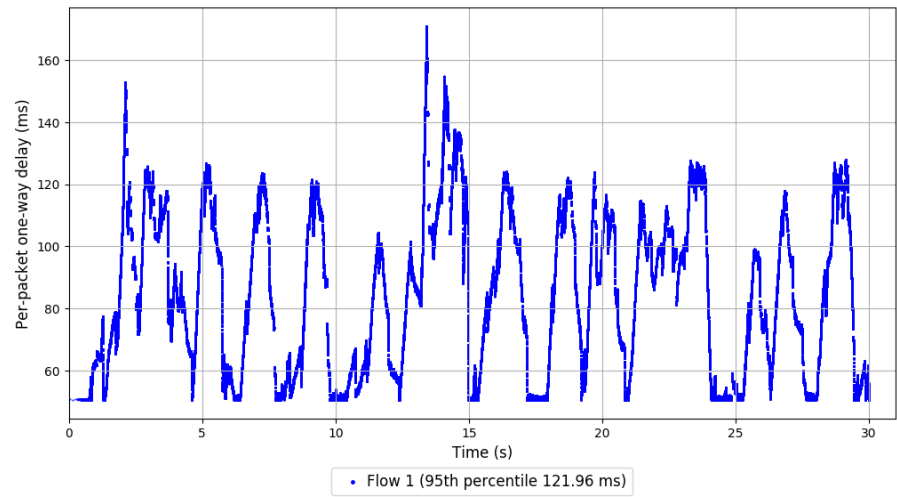
Run 3: Report of FillP — Data Link

Flow 1 ingress (mean 841.65 Mbit/s) — Flow 1 egress (mean 820.22 Mbit/s)

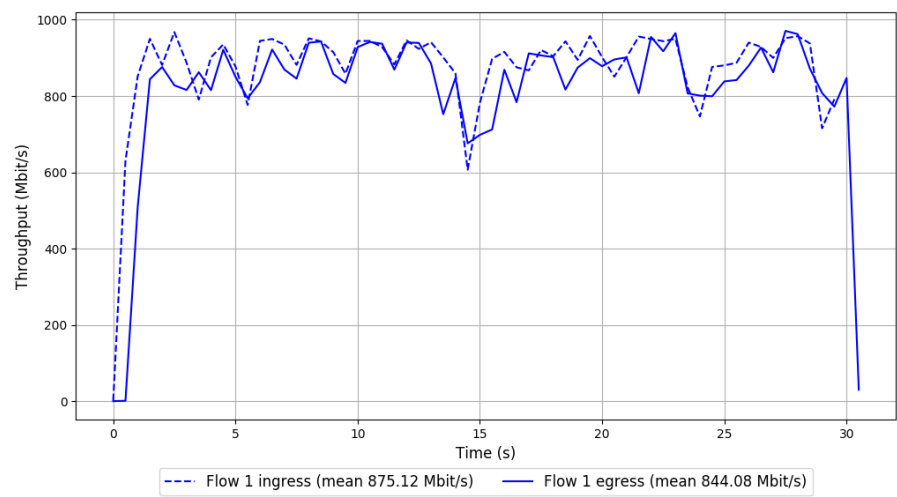• Flow 1 (95th percentile 118.97 ms)

```
Run 4: Statistics of FillP

Start at: 2018-09-06 23:33:35
End at: 2018-09-06 23:34:05
Local clock offset: -0.147 ms
Remote clock offset: -0.034 ms


# Below is generated by plot.py at 2018-09-07 01:02:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 844.08 Mbit/s
95th percentile per-packet one-way delay: 121.962 ms
Loss rate: 3.55%
-- Flow 1:
Average throughput: 844.08 Mbit/s
95th percentile per-packet one-way delay: 121.962 ms
Loss rate: 3.55%
```
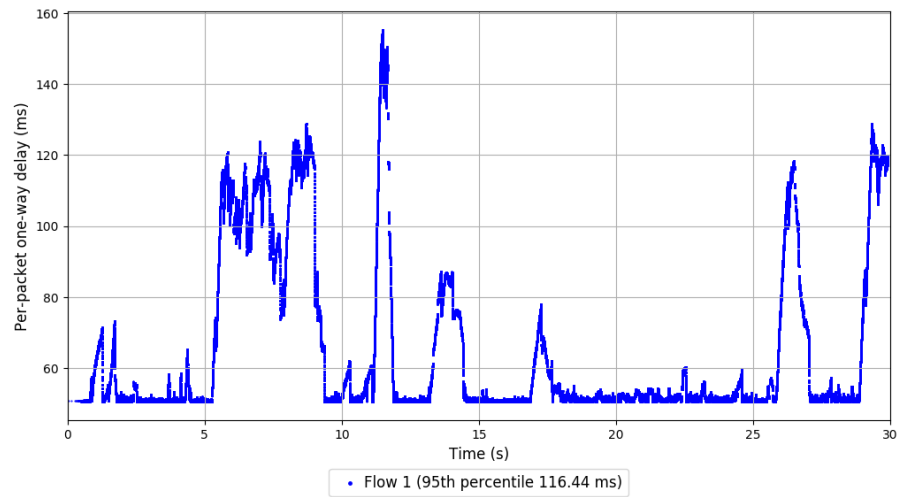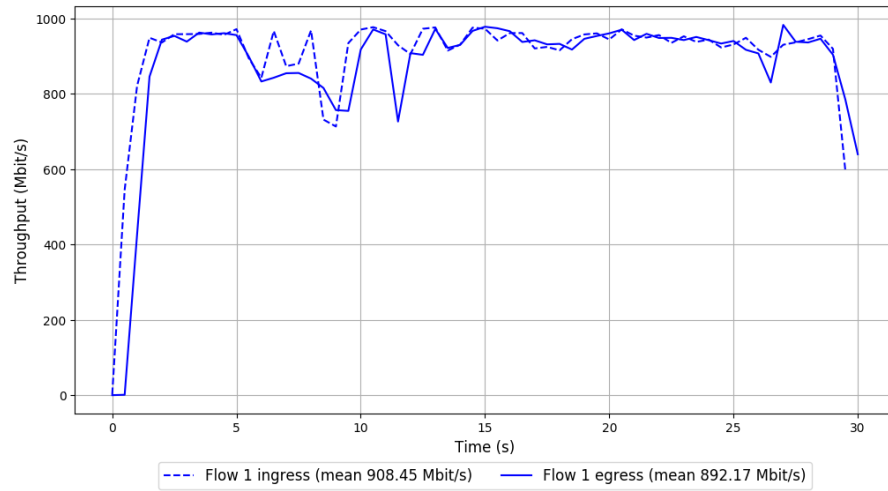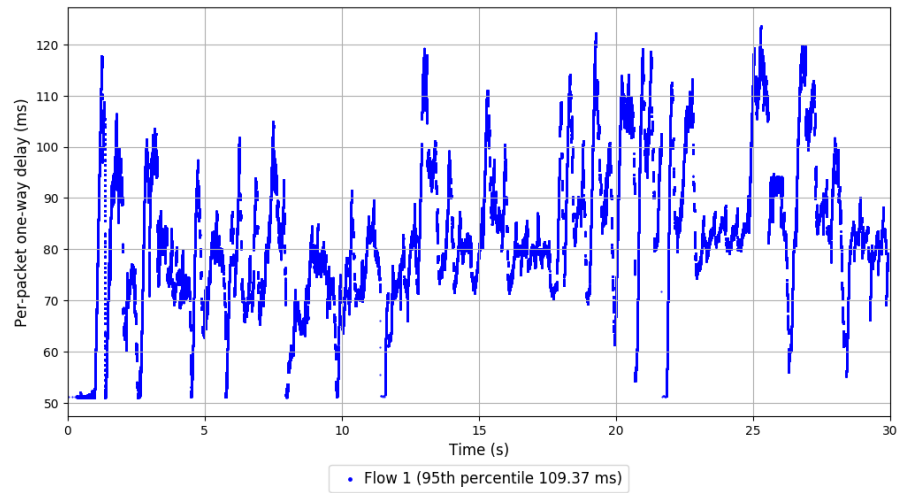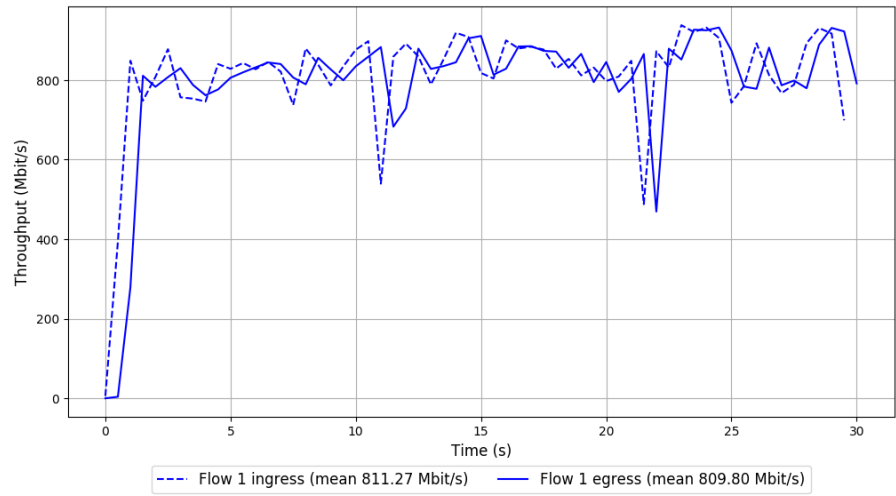
Run 4: Report of FillP — Data Link

Flow 1 ingress (mean 875.12 Mbit/s)   Flow 1 egress (mean 844.08 Mbit/s)

Flow 1 (95th percentile 121.96 ms)

```
Run 5: Statistics of FillP

Start at: 2018-09-06 23:59:29
End at: 2018-09-06 23:59:59
Local clock offset: 0.144 ms
Remote clock offset: 0.033 ms


# Below is generated by plot.py at 2018-09-07 01:03:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 892.17 Mbit/s
95th percentile per-packet one-way delay: 116.437 ms
Loss rate: 1.79%
-- Flow 1:
Average throughput: 892.17 Mbit/s
95th percentile per-packet one-way delay: 116.437 ms
Loss rate: 1.79%
```

Run 5: Report of FillP — Data Link

Flow 1 ingress (mean 908.45 Mbit/s)   Flow 1 egress (mean 892.17 Mbit/s)

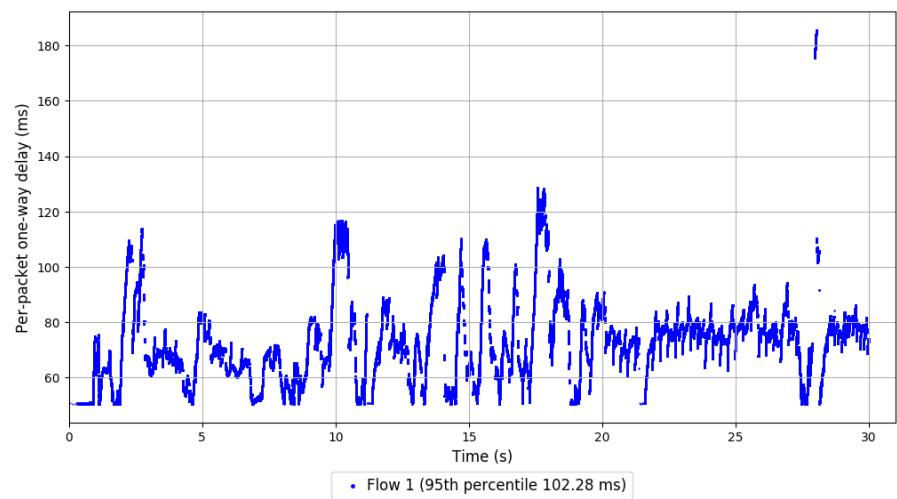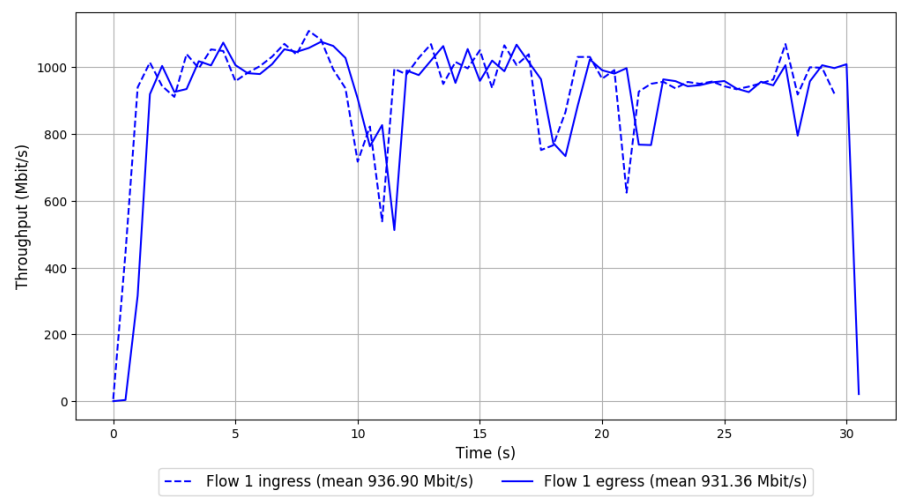Flow 1 (95th percentile 116.44 ms)

```
Run 1: Statistics of FillP-Sheep

Start at: 2018-09-06 22:09:28
End at: 2018-09-06 22:09:58
Local clock offset: -0.295 ms
Remote clock offset: -0.011 ms


# Below is generated by plot.py at 2018-09-07 01:03:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 809.80 Mbit/s
95th percentile per-packet one-way delay: 109.373 ms
Loss rate: 0.18%
-- Flow 1:
Average throughput: 809.80 Mbit/s
95th percentile per-packet one-way delay: 109.373 ms
Loss rate: 0.18%
```

Run 1: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 811.27 Mbit/s) — — — Flow 1 egress (mean 809.80 Mbit/s)

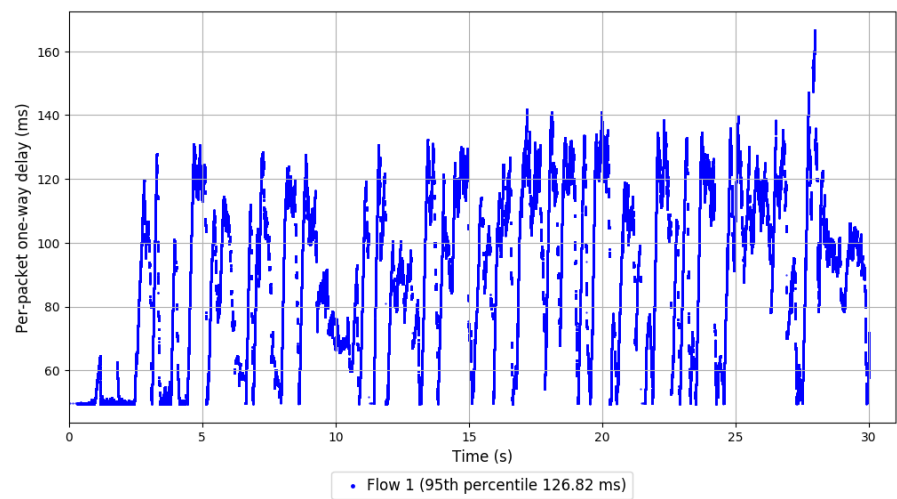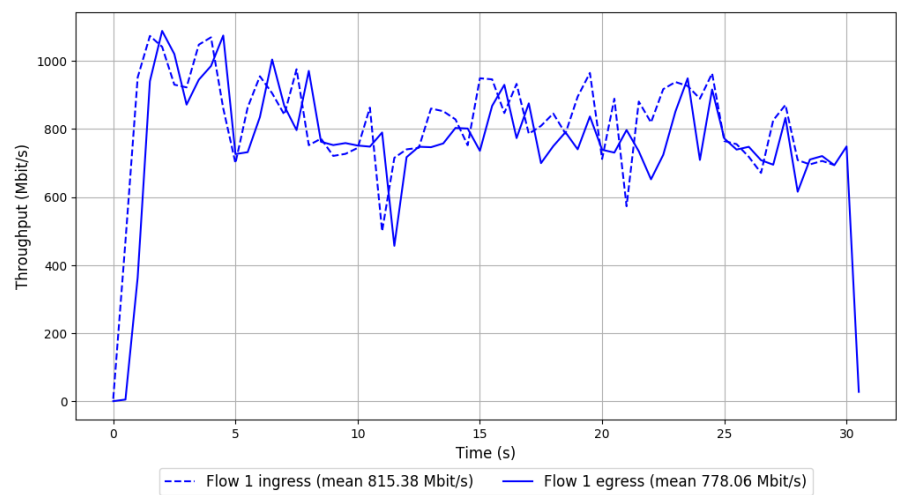• Flow 1 (95th percentile 109.37 ms)

45

```
Run 2: Statistics of FillP-Sheep

Start at: 2018-09-06 22:35:15
End at: 2018-09-06 22:35:45
Local clock offset: -0.071 ms
Remote clock offset: -0.096 ms


# Below is generated by plot.py at 2018-09-07 01:04:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 931.36 Mbit/s
95th percentile per-packet one-way delay: 102.280 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 931.36 Mbit/s
95th percentile per-packet one-way delay: 102.280 ms
Loss rate: 0.59%
```

Run 2: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 936.90 Mbit/s) ---- Flow 1 egress (mean 931.36 Mbit/s) ——

• Flow 1 (95th percentile 102.28 ms)

```
Run 3: Statistics of FillP-Sheep

Start at: 2018-09-06 23:00:55
End at: 2018-09-06 23:01:25
Local clock offset: -0.097 ms
Remote clock offset: -0.036 ms


# Below is generated by plot.py at 2018-09-07 01:04:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 778.06 Mbit/s
95th percentile per-packet one-way delay: 126.821 ms
Loss rate: 4.57%
-- Flow 1:
Average throughput: 778.06 Mbit/s
95th percentile per-packet one-way delay: 126.821 ms
Loss rate: 4.57%
```
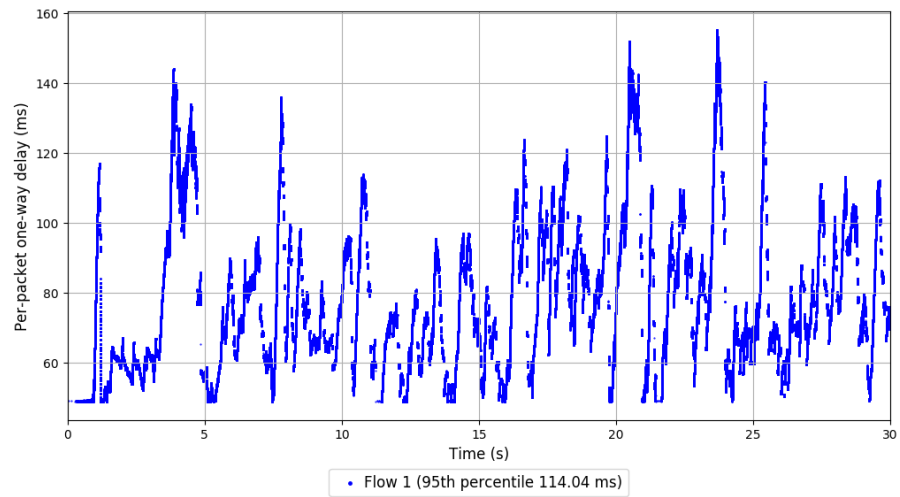
Run 3: Report of FillP-Sheep — Data Link

```
Run 4: Statistics of FillP-Sheep

Start at: 2018-09-06 23:26:40
End at: 2018-09-06 23:27:10
Local clock offset: 0.12 ms
Remote clock offset: 0.007 ms


# Below is generated by plot.py at 2018-09-07 01:11:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 833.25 Mbit/s
95th percentile per-packet one-way delay: 114.042 ms
Loss rate: 0.50%
-- Flow 1:
Average throughput: 833.25 Mbit/s
95th percentile per-packet one-way delay: 114.042 ms
Loss rate: 0.50%
```
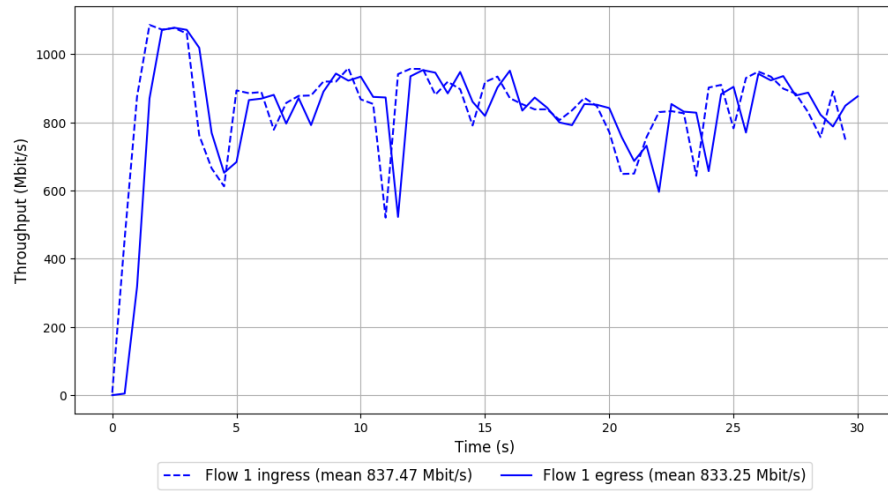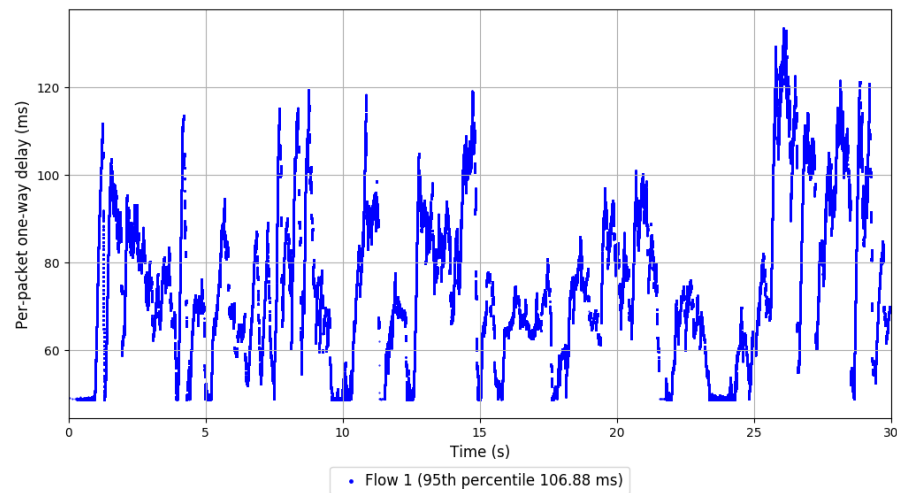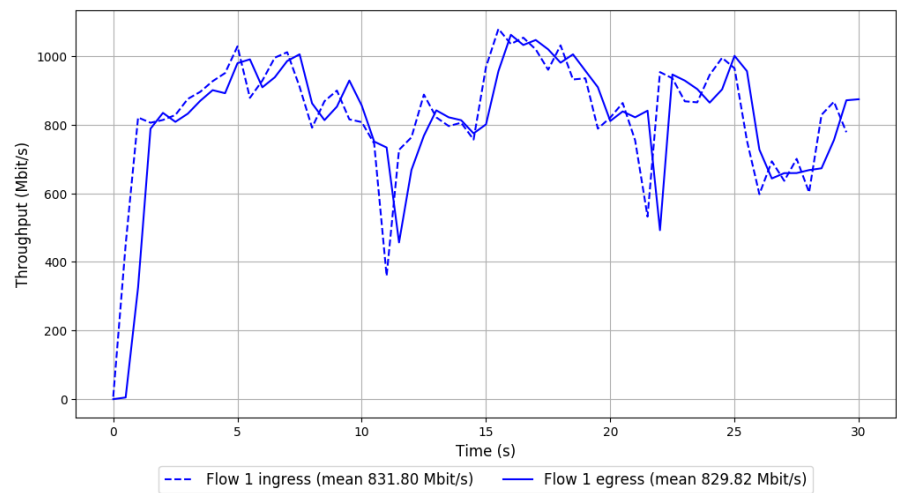
Run 4: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 837.47 Mbit/s)   Flow 1 egress (mean 833.25 Mbit/s)

• Flow 1 (95th percentile 114.04 ms)

```
Run 5: Statistics of FillP-Sheep

Start at: 2018-09-06 23:52:40
End at: 2018-09-06 23:53:10
Local clock offset: 0.216 ms
Remote clock offset: 0.04 ms


# Below is generated by plot.py at 2018-09-07 01:18:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 829.82 Mbit/s
95th percentile per-packet one-way delay: 106.884 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 829.82 Mbit/s
95th percentile per-packet one-way delay: 106.884 ms
Loss rate: 0.23%
```
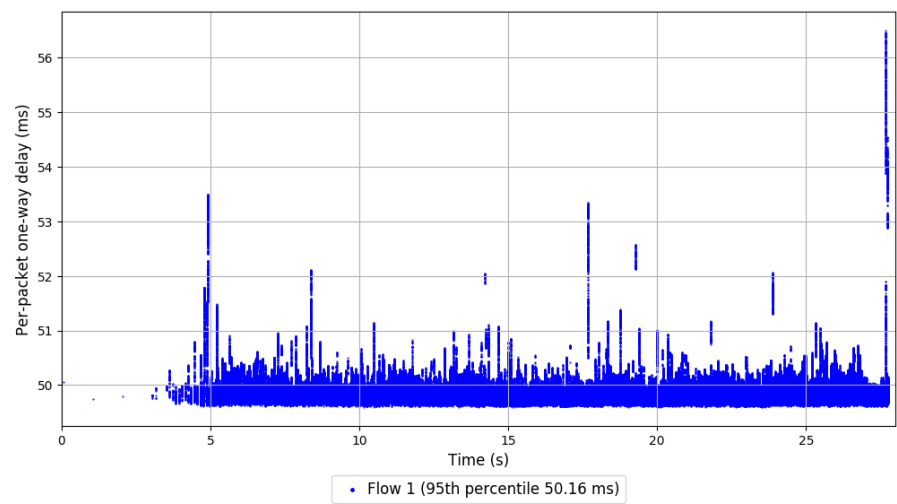
Run 5: Report of FillP-Sheep — Data Link

```
Run 1: Statistics of Indigo

Start at: 2018-09-06 22:13:48
End at: 2018-09-06 22:14:18
Local clock offset: 0.019 ms
Remote clock offset: -0.01 ms


# Below is generated by plot.py at 2018-09-07 01:18:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 184.04 Mbit/s
95th percentile per-packet one-way delay: 50.163 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 184.04 Mbit/s
95th percentile per-packet one-way delay: 50.163 ms
Loss rate: 0.00%
```
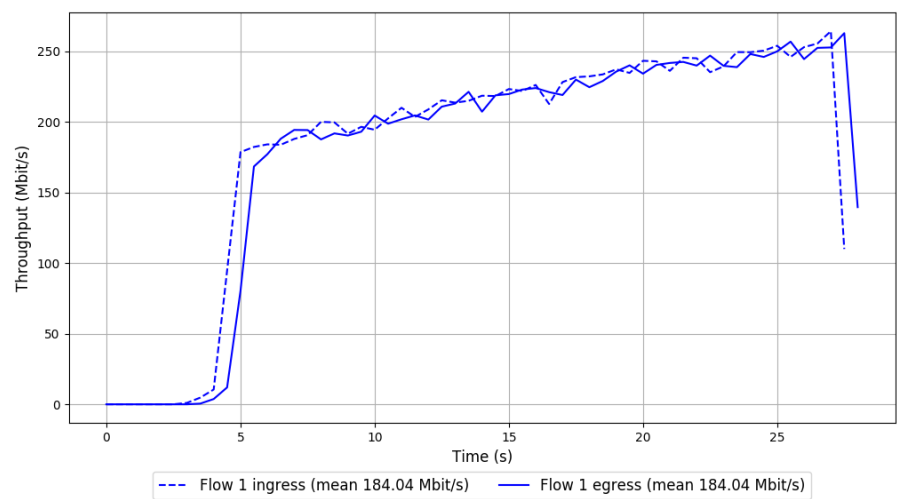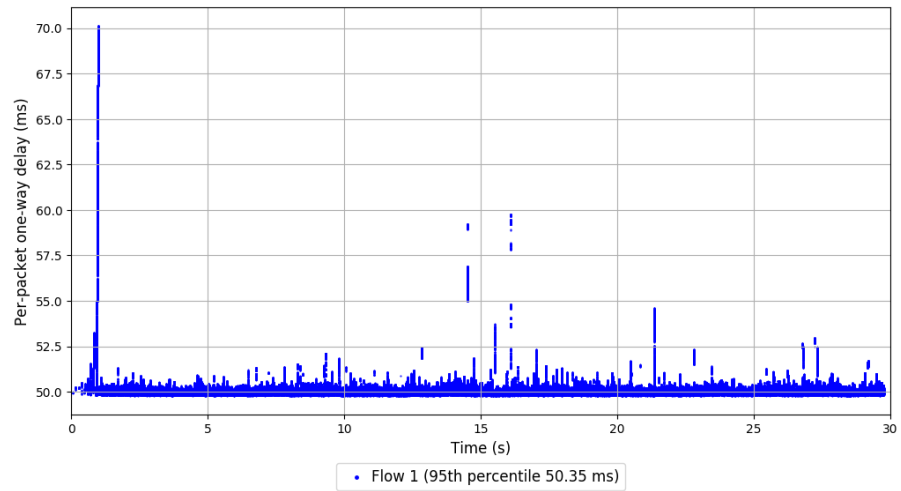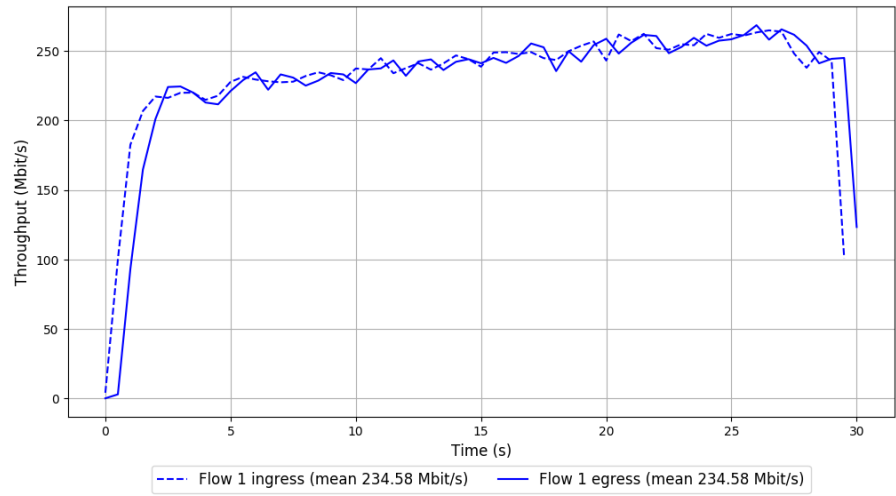
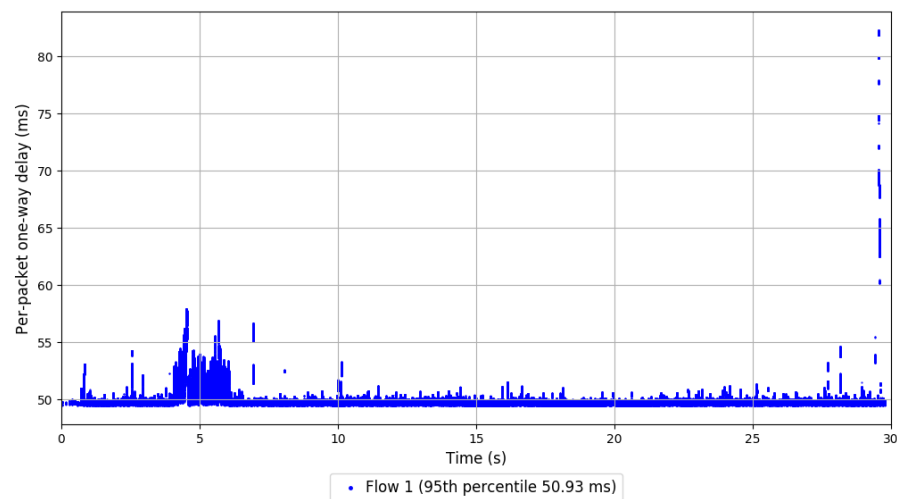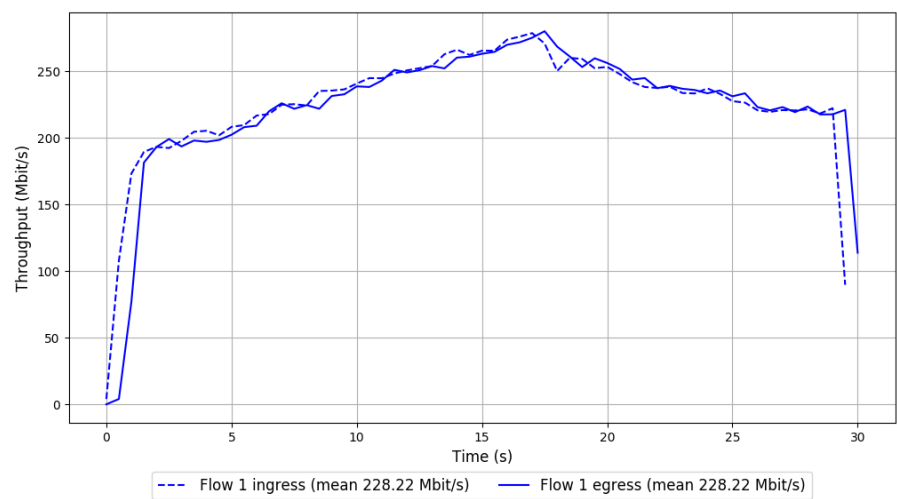Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-09-06 22:39:37
End at: 2018-09-06 22:40:07
Local clock offset: 0.263 ms
Remote clock offset: -0.069 ms


# Below is generated by plot.py at 2018-09-07 01:18:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 234.58 Mbit/s
95th percentile per-packet one-way delay: 50.349 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 234.58 Mbit/s
95th percentile per-packet one-way delay: 50.349 ms
Loss rate: 0.00%
```
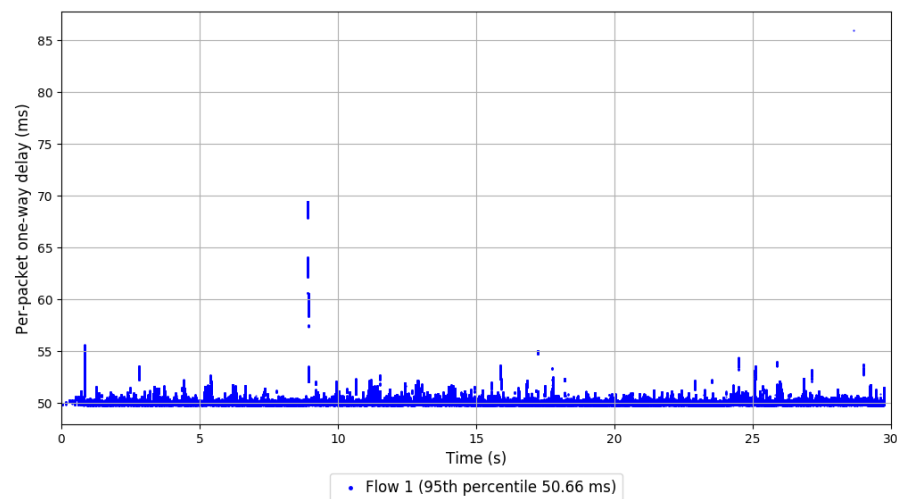
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-09-06 23:05:14
End at: 2018-09-06 23:05:44
Local clock offset: -0.148 ms
Remote clock offset: -0.072 ms


# Below is generated by plot.py at 2018-09-07 01:18:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 228.22 Mbit/s
95th percentile per-packet one-way delay: 50.930 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 228.22 Mbit/s
95th percentile per-packet one-way delay: 50.930 ms
Loss rate: 0.00%
```

Run 3: Report of Indigo — Data Link

Flow 1 ingress (mean 228.22 Mbit/s) — — —   Flow 1 egress (mean 228.22 Mbit/s) ———
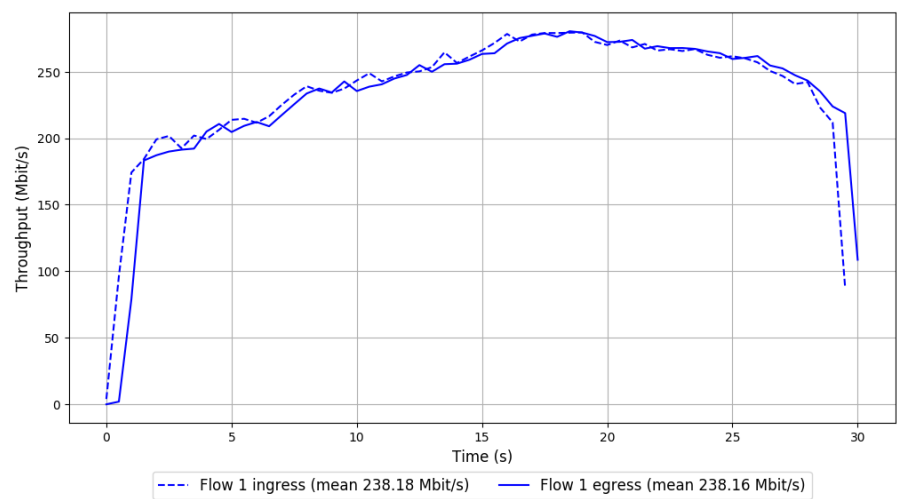

• Flow 1 (95th percentile 50.93 ms)

```
Run 4: Statistics of Indigo

Start at: 2018-09-06 23:31:01
End at: 2018-09-06 23:31:31
Local clock offset: 0.483 ms
Remote clock offset: -0.008 ms


# Below is generated by plot.py at 2018-09-07 01:18:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 238.16 Mbit/s
95th percentile per-packet one-way delay: 50.661 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 238.16 Mbit/s
95th percentile per-packet one-way delay: 50.661 ms
Loss rate: 0.01%
```

Run 4: Report of Indigo — Data Link

```
Run 5: Statistics of Indigo

Start at: 2018-09-06 23:56:58
End at: 2018-09-06 23:57:28
Local clock offset: 0.484 ms
Remote clock offset: 0.012 ms


# Below is generated by plot.py at 2018-09-07 01:18:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 212.41 Mbit/s
95th percentile per-packet one-way delay: 50.337 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 212.41 Mbit/s
95th percentile per-packet one-way delay: 50.337 ms
Loss rate: 0.00%
```
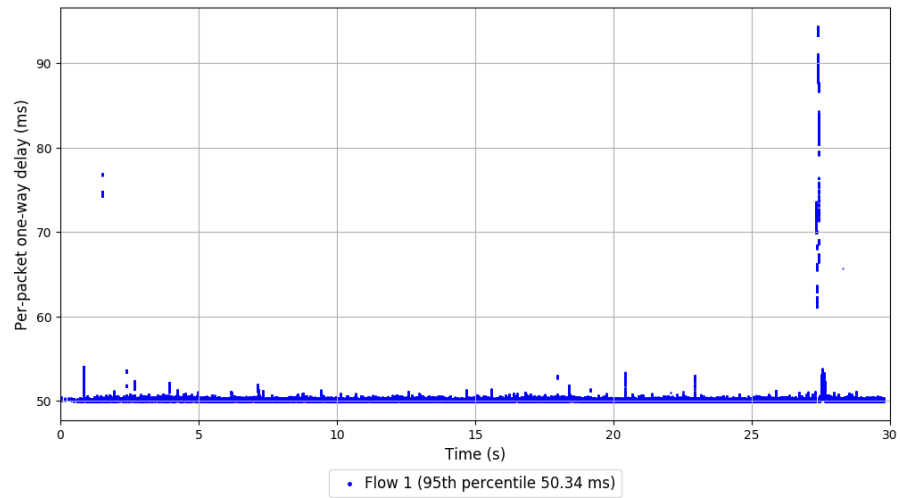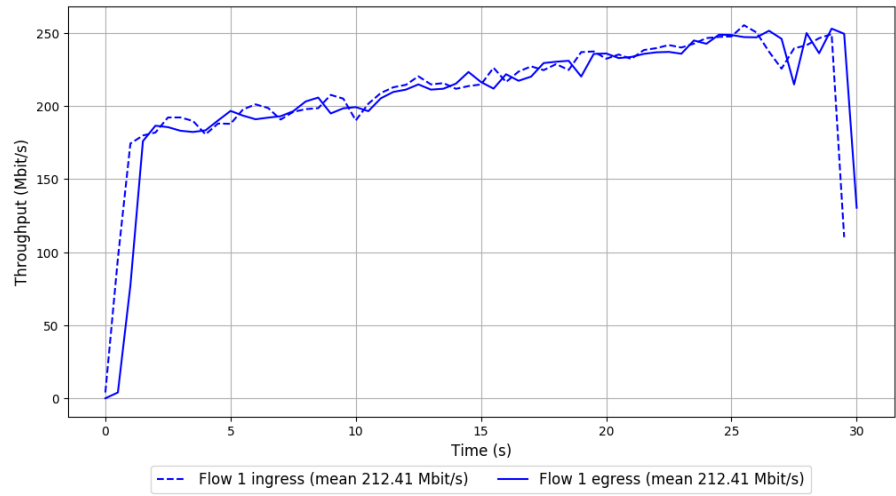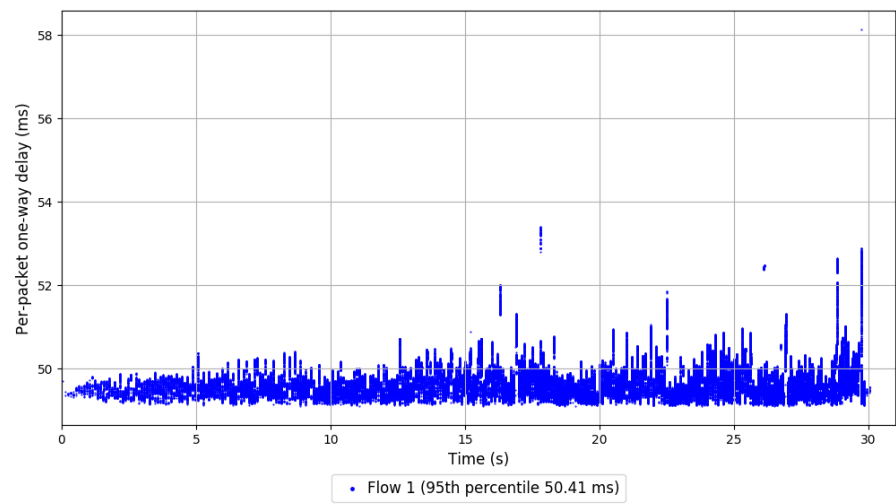
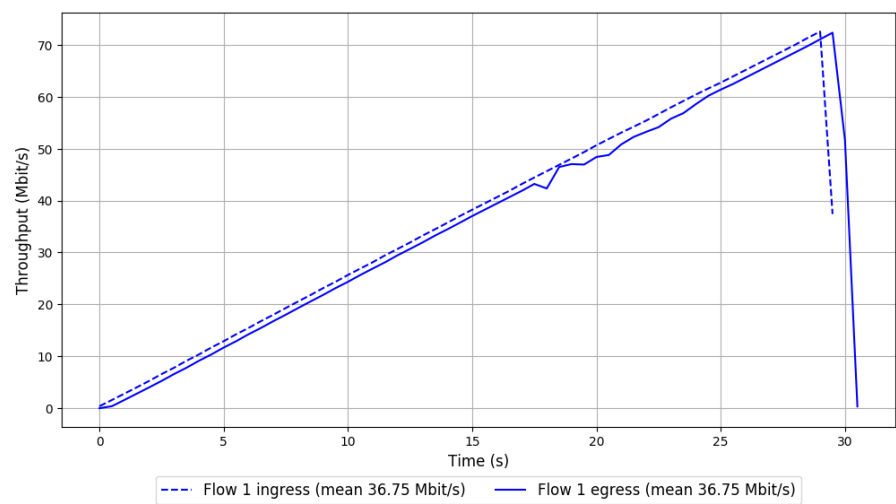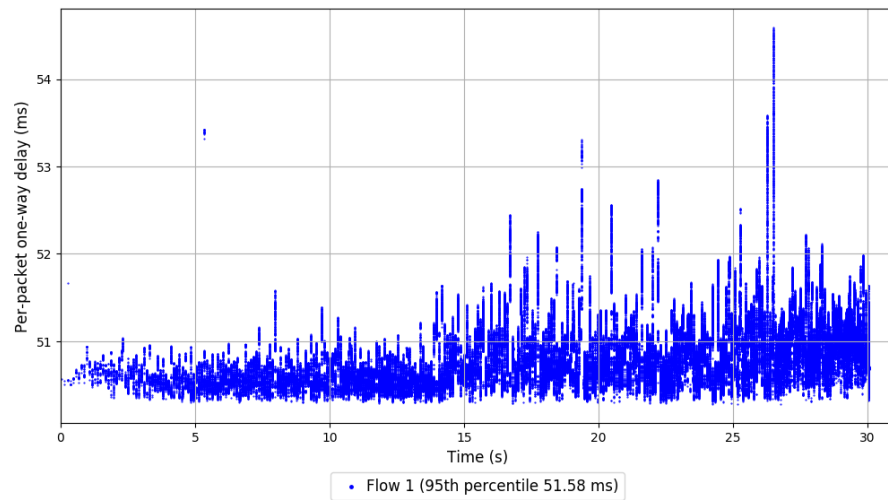Run 5: Report of Indigo — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2018-09-06 22:12:38
End at: 2018-09-06 22:13:08
Local clock offset: 0.421 ms
Remote clock offset: 0.009 ms

# Below is generated by plot.py at 2018-09-07 01:18:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 36.75 Mbit/s
95th percentile per-packet one-way delay: 50.412 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 36.75 Mbit/s
95th percentile per-packet one-way delay: 50.412 ms
Loss rate: 0.00%
```

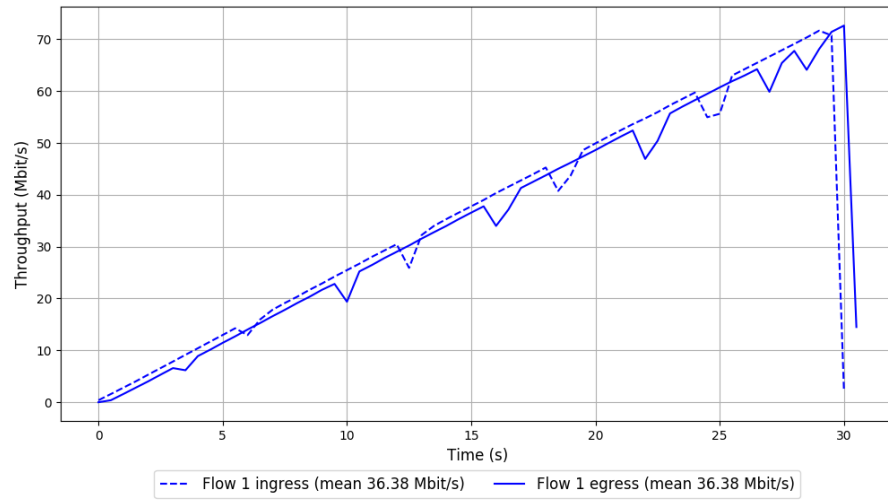## Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-09-06 22:38:28
End at: 2018-09-06 22:38:58
Local clock offset: 0.244 ms
Remote clock offset: -0.054 ms


# Below is generated by plot.py at 2018-09-07 01:18:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 36.38 Mbit/s
95th percentile per-packet one-way delay: 51.579 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 36.38 Mbit/s
95th percentile per-packet one-way delay: 51.579 ms
Loss rate: 0.01%
```
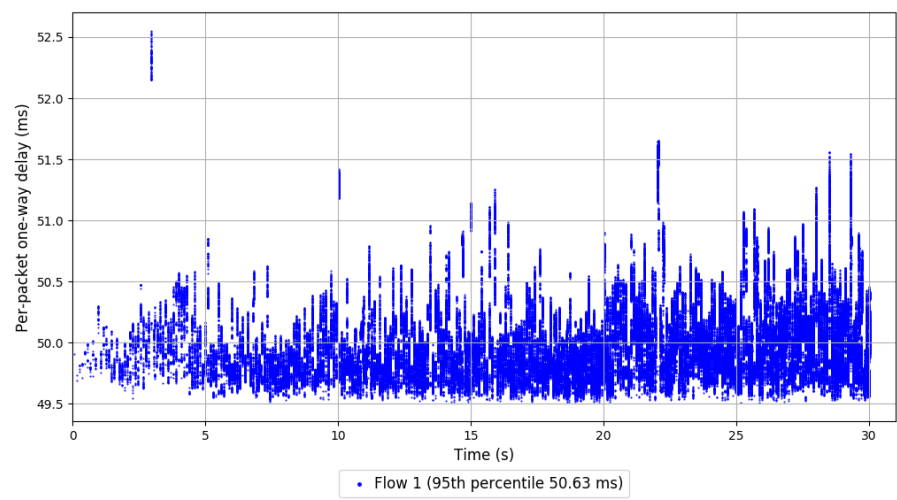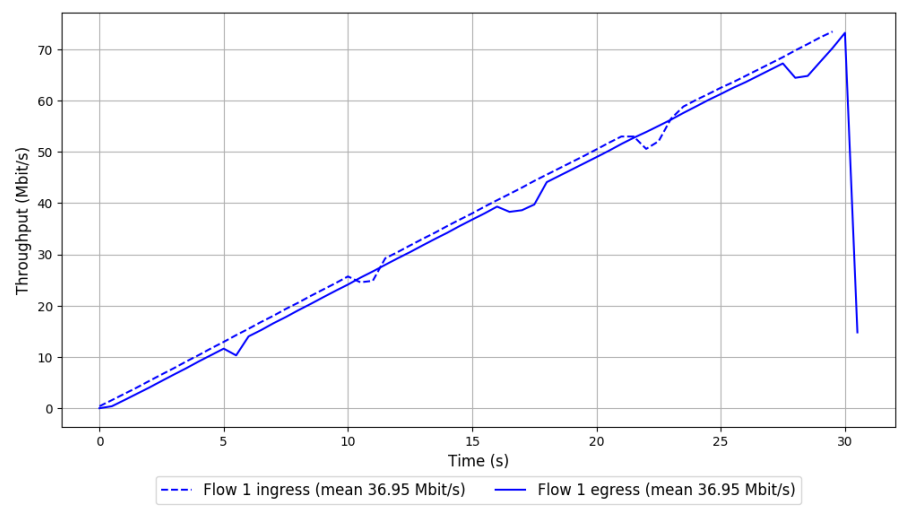
Run 2: Report of LEDBAT — Data Link

Flow 1 ingress (mean 36.38 Mbit/s)   Flow 1 egress (mean 36.38 Mbit/s)

• Flow 1 (95th percentile 51.58 ms)

67

```
Run 3: Statistics of LEDBAT

Start at: 2018-09-06 23:04:04
End at: 2018-09-06 23:04:34
Local clock offset: -0.119 ms
Remote clock offset: -0.09 ms


# Below is generated by plot.py at 2018-09-07 01:18:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 36.95 Mbit/s
95th percentile per-packet one-way delay: 50.630 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 36.95 Mbit/s
95th percentile per-packet one-way delay: 50.630 ms
Loss rate: 0.00%
```
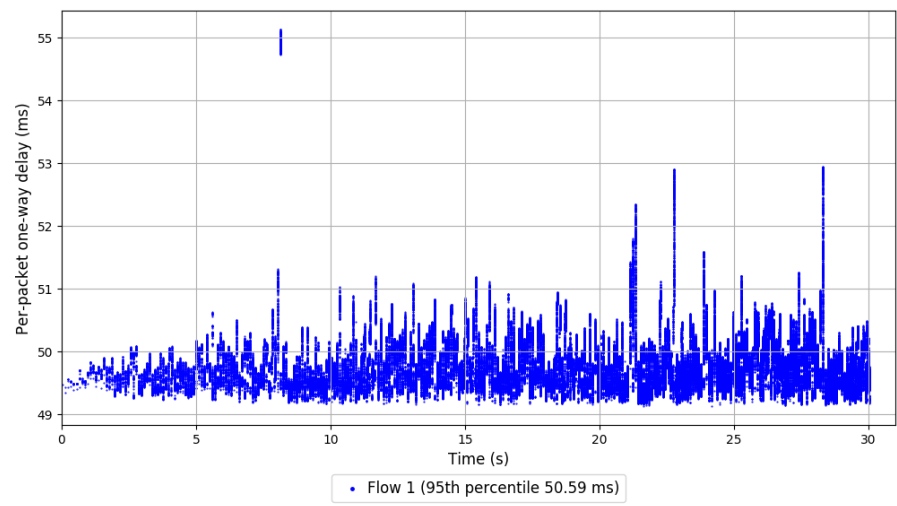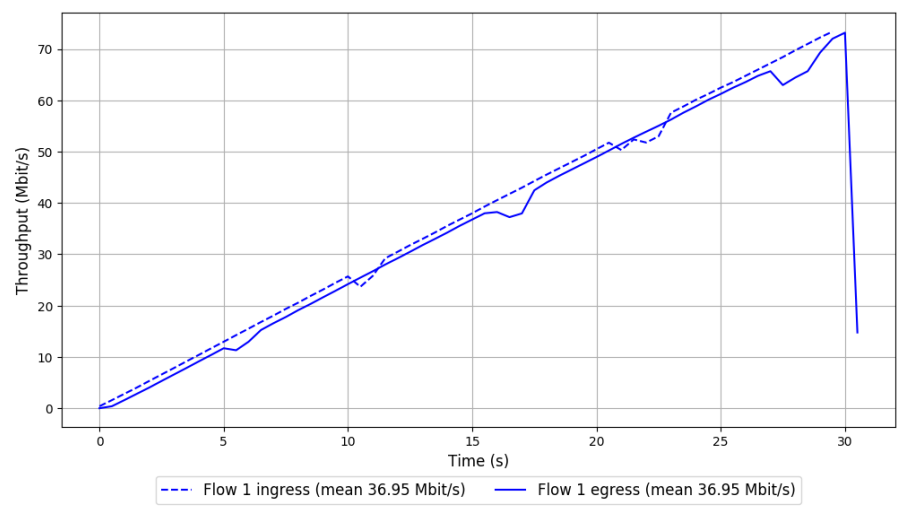
Run 3: Report of LEDBAT — Data Link

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

Flow 1 (95th percentile 50.63 ms)

```
Run 4: Statistics of LEDBAT

Start at: 2018-09-06 23:29:52
End at: 2018-09-06 23:30:22
Local clock offset: 0.524 ms
Remote clock offset: 0.005 ms


# Below is generated by plot.py at 2018-09-07 01:18:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 36.95 Mbit/s
95th percentile per-packet one-way delay: 50.590 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 36.95 Mbit/s
95th percentile per-packet one-way delay: 50.590 ms
Loss rate: 0.00%
```
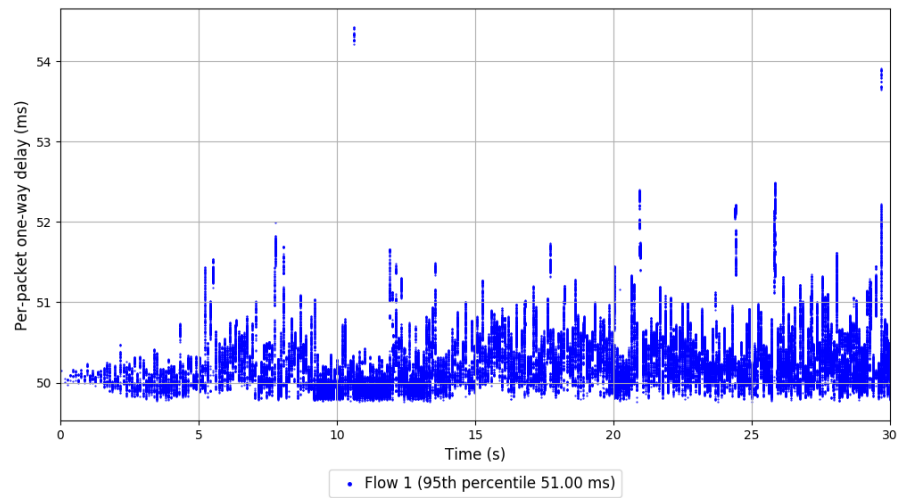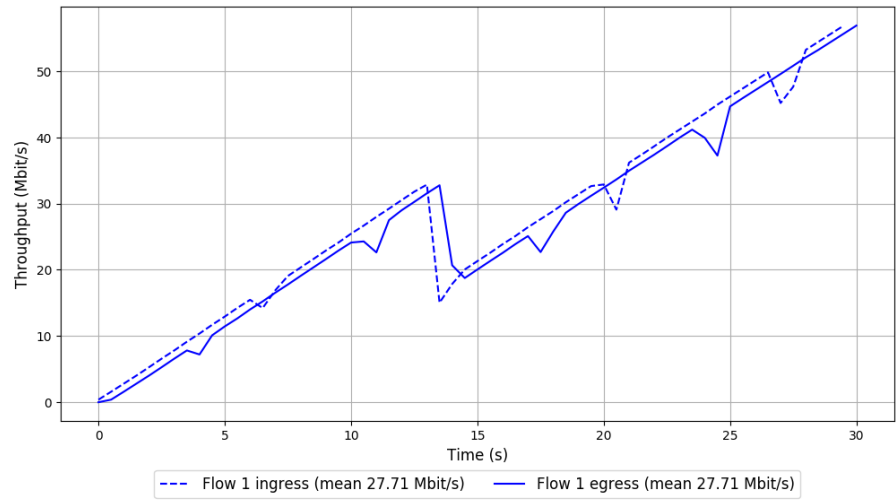
Run 4: Report of LEDBAT — Data Link

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

Flow 1 (95th percentile 50.59 ms)

Run 5: Statistics of LEDBAT

Start at: 2018-09-06 23:55:49
End at: 2018-09-06 23:56:19
Local clock offset: 0.533 ms
Remote clock offset: 0.016 ms

Below is generated by plot.py at 2018-09-07 01:18:44
Datalink statistics
-- Total of 1 flow:
Average throughput: 27.71 Mbit/s
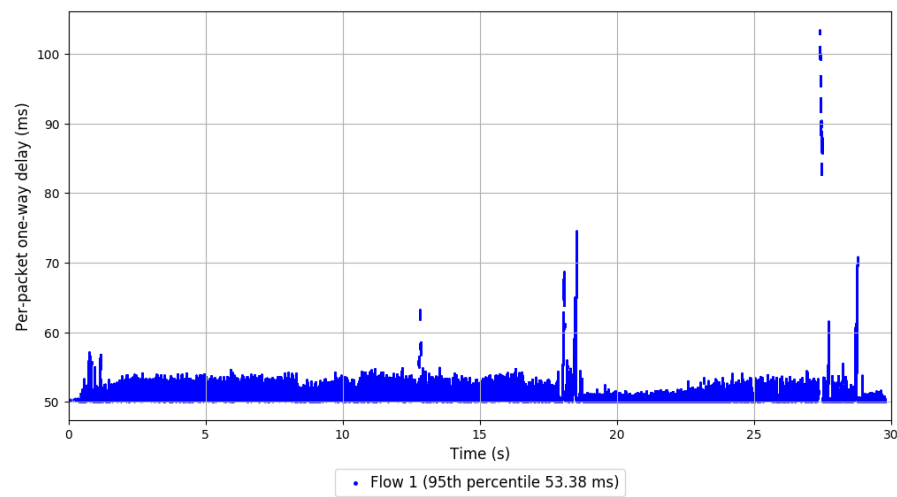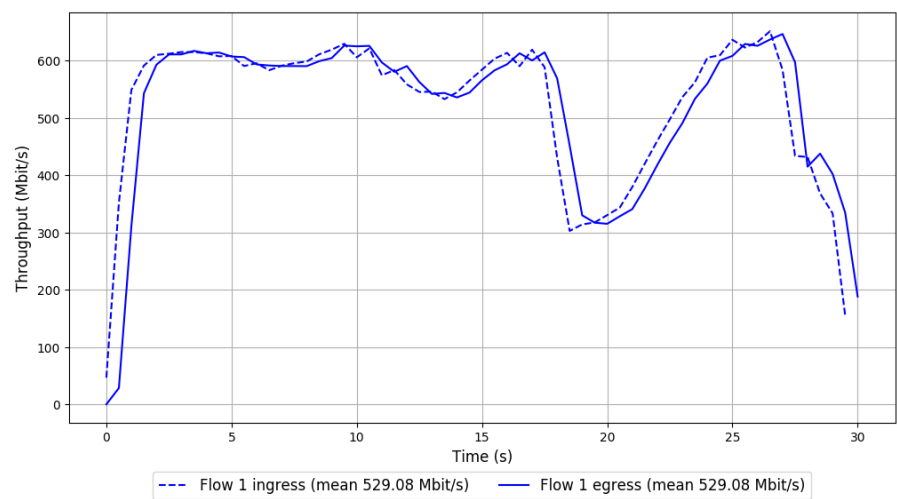95th percentile per-packet one-way delay: 51.000 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 27.71 Mbit/s
95th percentile per-packet one-way delay: 51.000 ms
Loss rate: 0.00%

Run 5: Report of LEDBAT — Data Link

Flow 1 ingress (mean 27.71 Mbit/s) ——— Flow 1 egress (mean 27.71 Mbit/s)

• Flow 1 (95th percentile 51.00 ms)

```
Run 1: Statistics of Indigo-Muses

Start at: 2018-09-06 22:21:36
End at: 2018-09-06 22:22:06
Local clock offset: 0.342 ms
Remote clock offset: -0.07 ms


# Below is generated by plot.py at 2018-09-07 01:18:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 529.08 Mbit/s
95th percentile per-packet one-way delay: 53.377 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 529.08 Mbit/s
95th percentile per-packet one-way delay: 53.377 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo-Muses — Data Link

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-09-06 22:47:26
End at: 2018-09-06 22:47:56
Local clock offset: -0.109 ms
Remote clock offset: -0.09 ms


# Below is generated by plot.py at 2018-09-07 01:19:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 618.12 Mbit/s
95th percentile per-packet one-way delay: 51.728 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 618.12 Mbit/s
95th percentile per-packet one-way delay: 51.728 ms
Loss rate: 0.00%
```
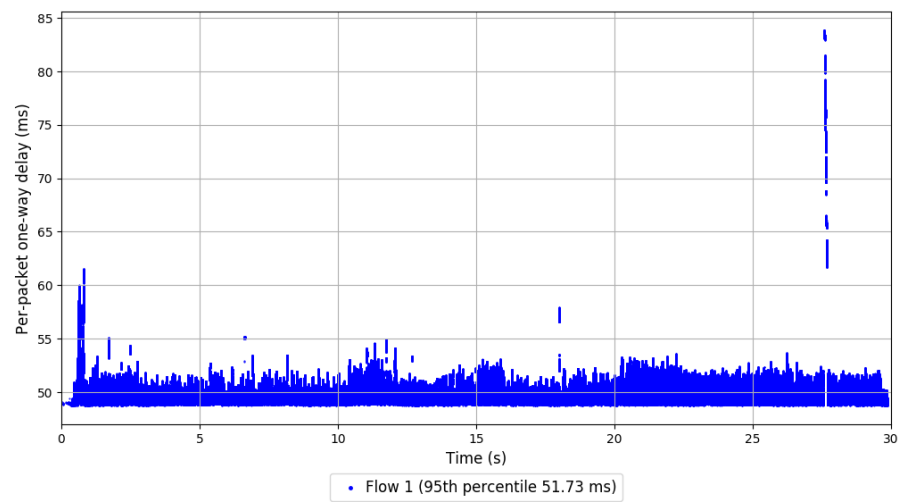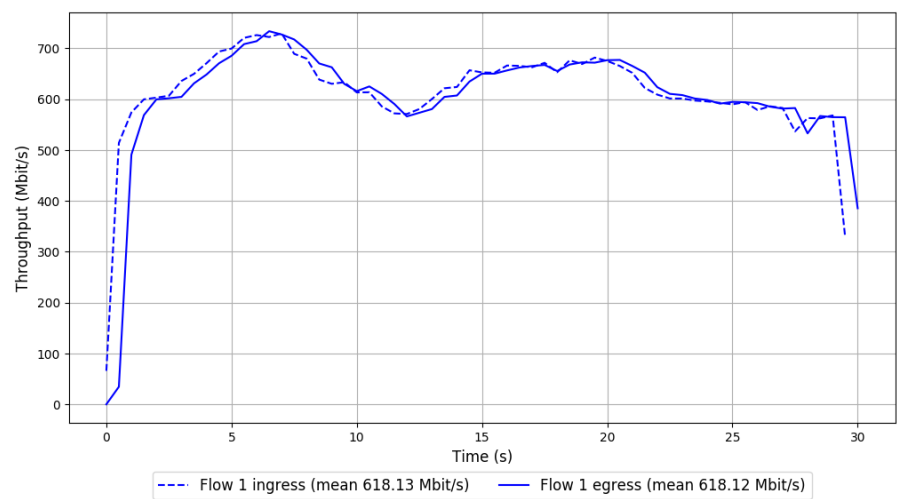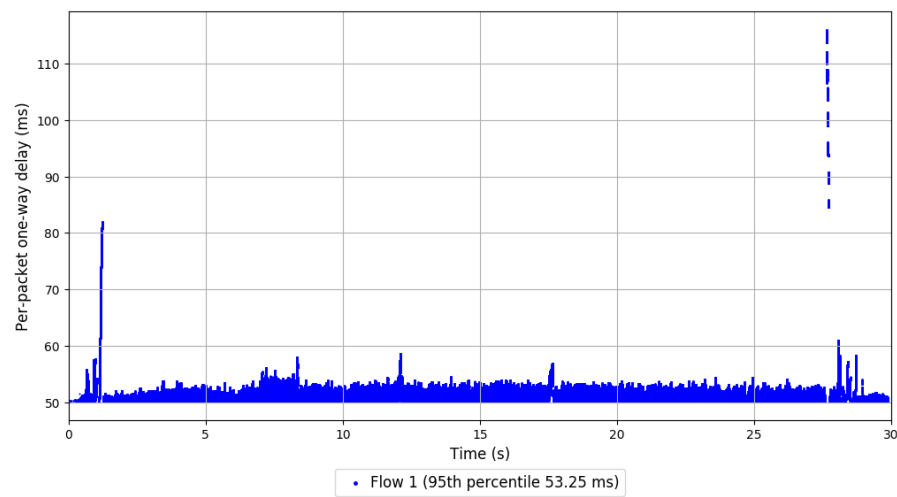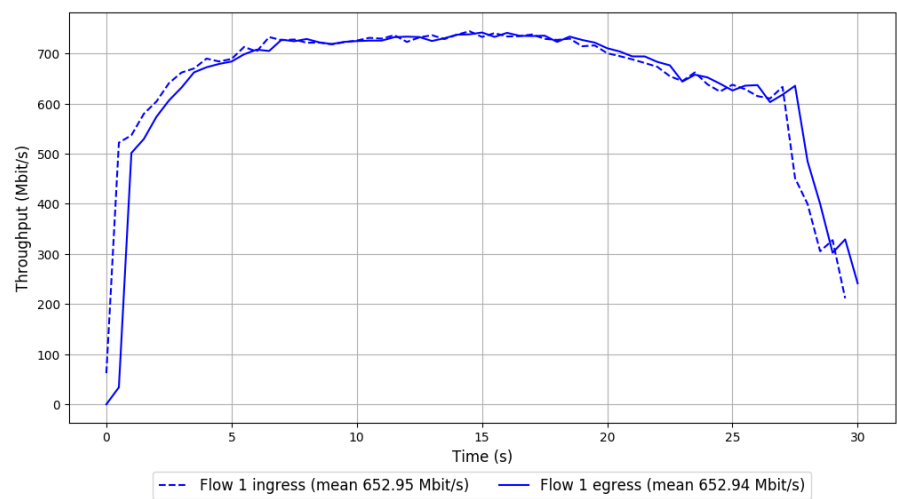
Run 2: Report of Indigo-Muses — Data Link

```
Run 3: Statistics of Indigo-Muses

Start at: 2018-09-06 23:13:03
End at: 2018-09-06 23:13:33
Local clock offset: -0.178 ms
Remote clock offset: -0.096 ms


# Below is generated by plot.py at 2018-09-07 01:20:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 652.94 Mbit/s
95th percentile per-packet one-way delay: 53.252 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 652.94 Mbit/s
95th percentile per-packet one-way delay: 53.252 ms
Loss rate: 0.00%
```

Run 3: Report of Indigo-Muses — Data Link

```
Run 4: Statistics of Indigo-Muses

Start at: 2018-09-06 23:38:50
End at: 2018-09-06 23:39:20
Local clock offset: 0.204 ms
Remote clock offset: 0.018 ms


# Below is generated by plot.py at 2018-09-07 01:20:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 618.37 Mbit/s
95th percentile per-packet one-way delay: 55.994 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 618.37 Mbit/s
95th percentile per-packet one-way delay: 55.994 ms
Loss rate: 0.00%
```
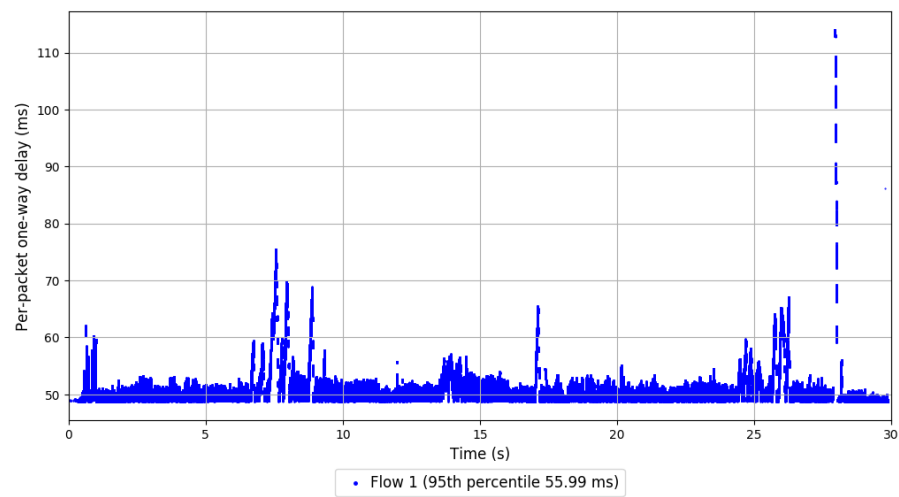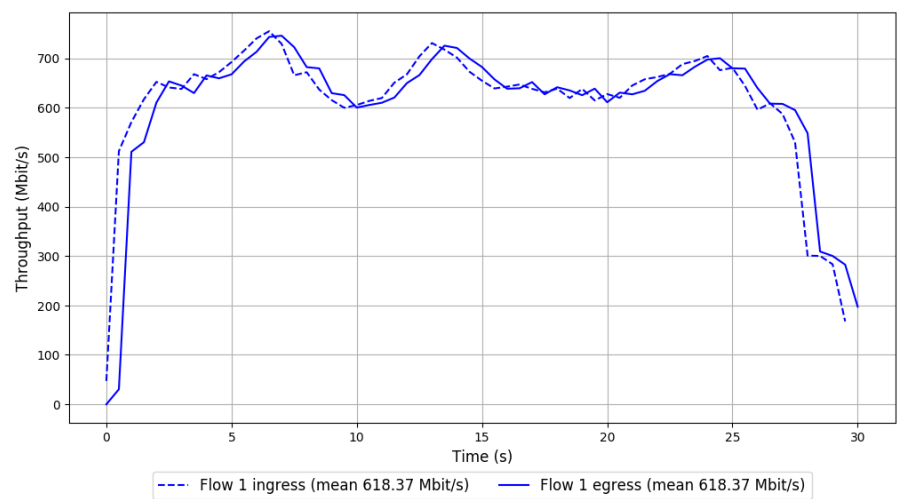
Run 4: Report of Indigo-Muses — Data Link

```
Run 5: Statistics of Indigo-Muses

Start at: 2018-09-07 00:04:47
End at: 2018-09-07 00:05:17
Local clock offset: 0.149 ms
Remote clock offset: 0.068 ms


# Below is generated by plot.py at 2018-09-07 01:20:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 621.98 Mbit/s
95th percentile per-packet one-way delay: 54.810 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 621.98 Mbit/s
95th percentile per-packet one-way delay: 54.810 ms
Loss rate: 0.00%
```
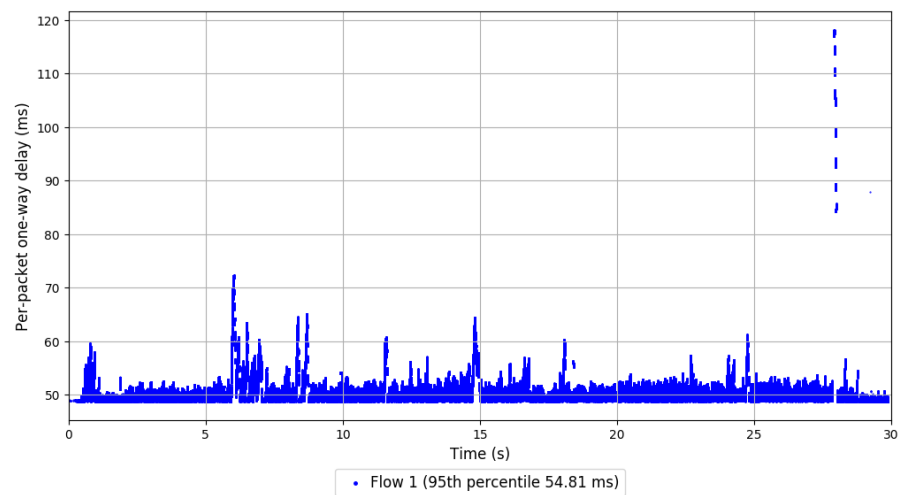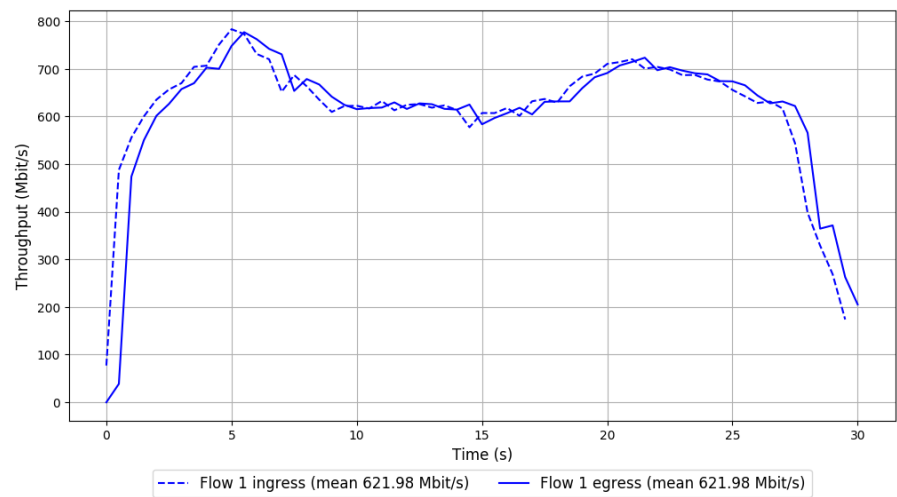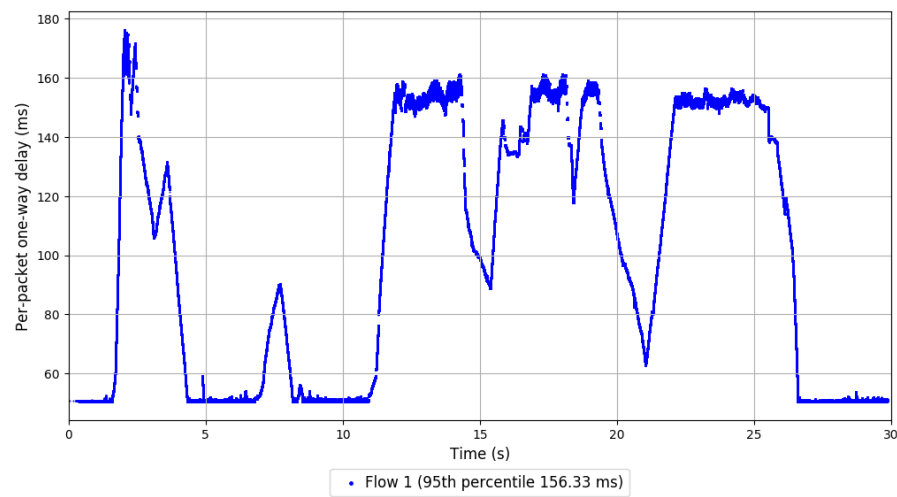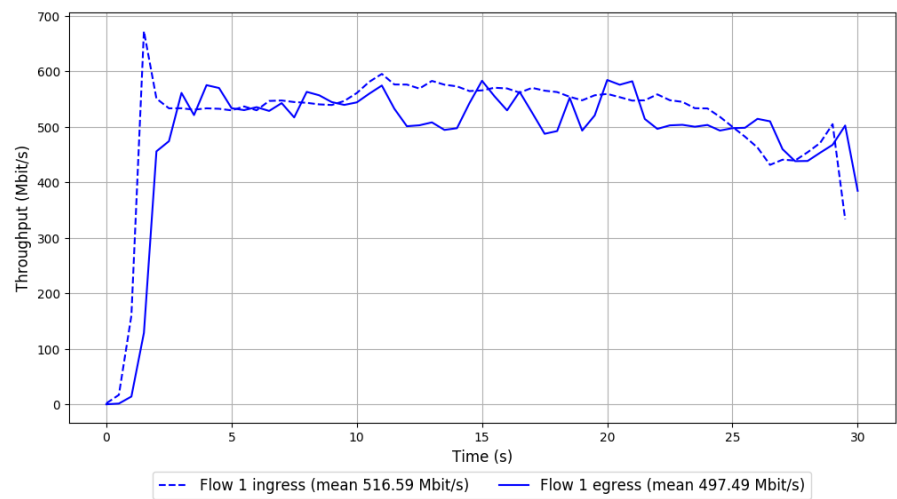
Run 5: Report of Indigo-Muses — Data Link

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-09-06 22:27:17
End at: 2018-09-06 22:27:47
Local clock offset: -0.092 ms
Remote clock offset: -0.096 ms


# Below is generated by plot.py at 2018-09-07 01:25:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 497.49 Mbit/s
95th percentile per-packet one-way delay: 156.326 ms
Loss rate: 3.70%
-- Flow 1:
Average throughput: 497.49 Mbit/s
95th percentile per-packet one-way delay: 156.326 ms
Loss rate: 3.70%
```

Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-09-06 22:53:10
End at: 2018-09-06 22:53:40
Local clock offset: 0.198 ms
Remote clock offset: -0.086 ms


# Below is generated by plot.py at 2018-09-07 01:26:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 462.62 Mbit/s
95th percentile per-packet one-way delay: 153.378 ms
Loss rate: 3.74%
-- Flow 1:
Average throughput: 462.62 Mbit/s
95th percentile per-packet one-way delay: 153.378 ms
Loss rate: 3.74%
```
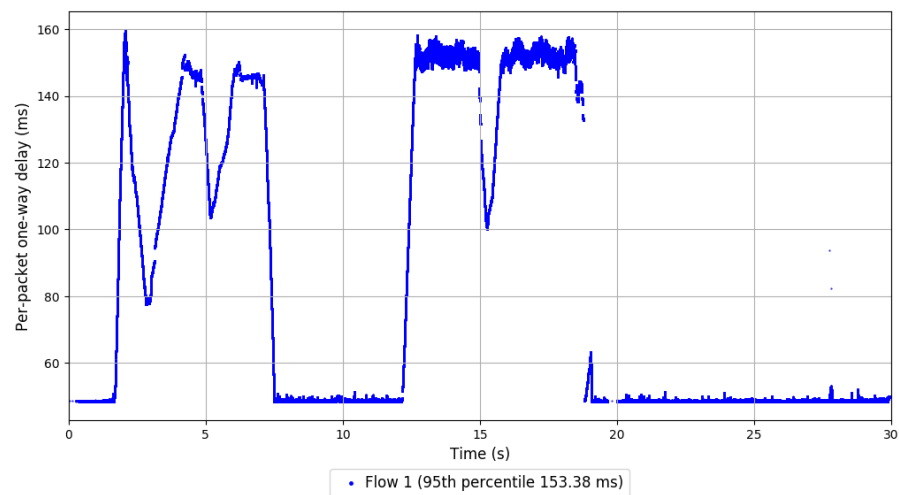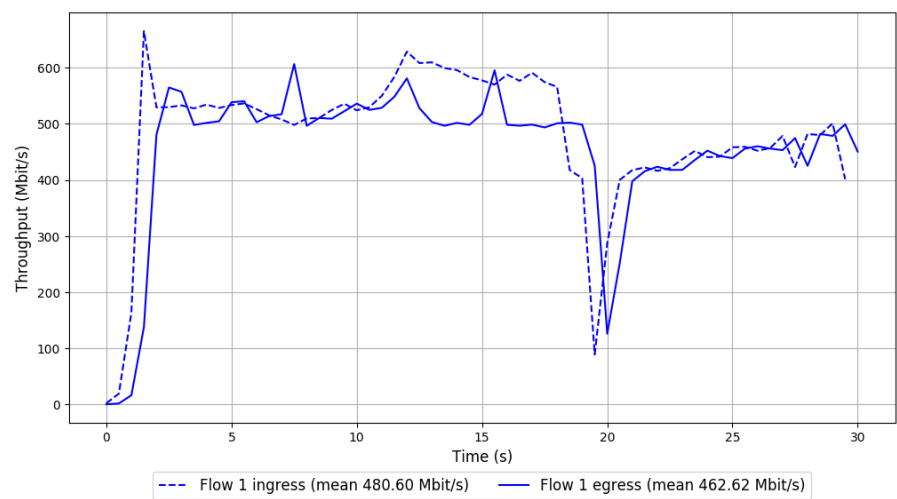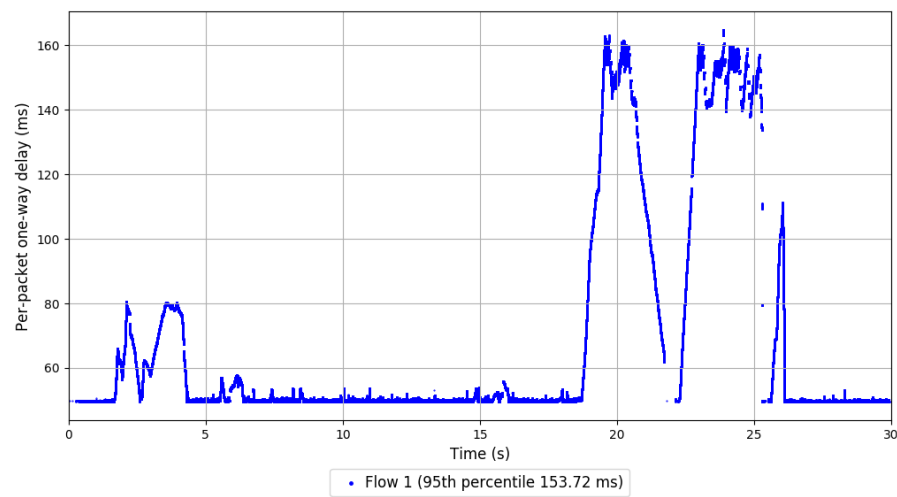
Run 2: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 480.60 Mbit/s)   Flow 1 egress (mean 462.62 Mbit/s)

Flow 1 (95th percentile 153.38 ms)

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-09-06 23:18:46
End at: 2018-09-06 23:19:16
Local clock offset: -0.01 ms
Remote clock offset: -0.048 ms


# Below is generated by plot.py at 2018-09-07 01:33:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 456.22 Mbit/s
95th percentile per-packet one-way delay: 153.718 ms
Loss rate: 1.93%
-- Flow 1:
Average throughput: 456.22 Mbit/s
95th percentile per-packet one-way delay: 153.718 ms
Loss rate: 1.93%
```
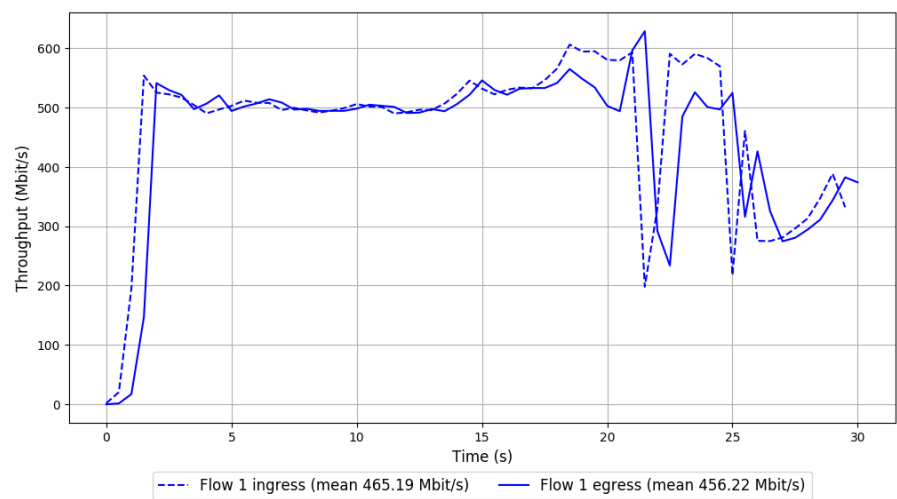
Run 3: Report of PCC-Allegro — Data Link

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-09-06 23:44:40
End at: 2018-09-06 23:45:10
Local clock offset: 0.254 ms
Remote clock offset: 0.057 ms


# Below is generated by plot.py at 2018-09-07 01:34:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 496.40 Mbit/s
95th percentile per-packet one-way delay: 149.317 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 496.40 Mbit/s
95th percentile per-packet one-way delay: 149.317 ms
Loss rate: 0.59%
```
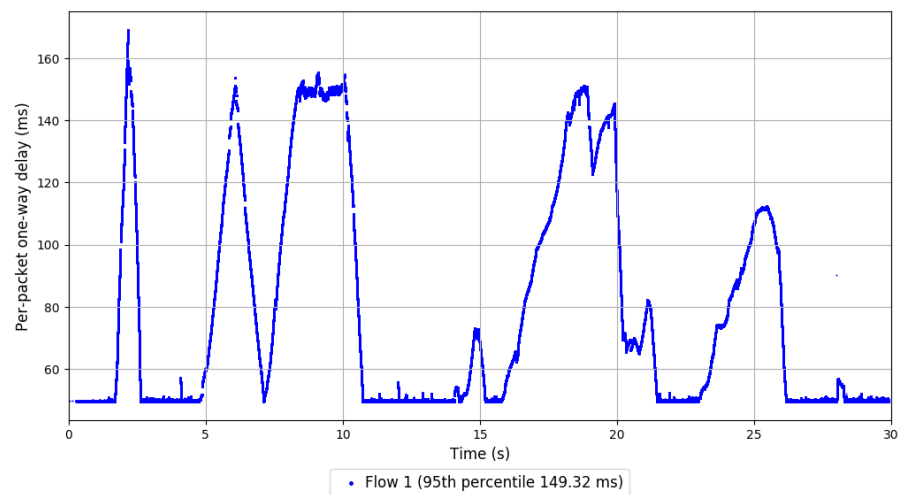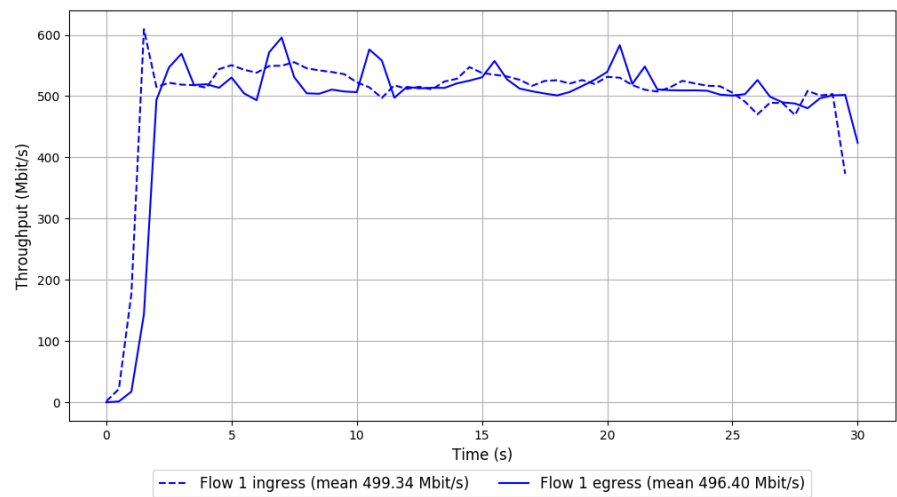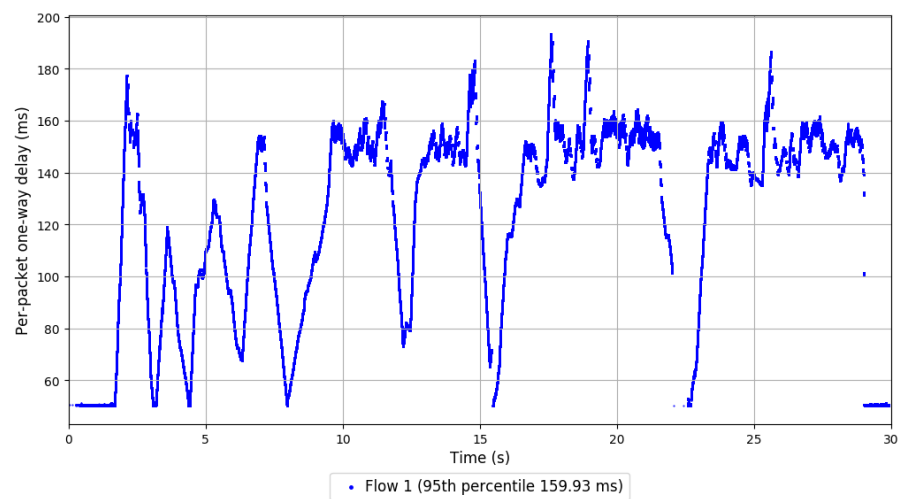
Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 499.34 Mbit/s) ---- Flow 1 egress (mean 496.40 Mbit/s) ——

• Flow 1 (95th percentile 149.32 ms)

```
Run 5: Statistics of PCC-Allegro

Start at: 2018-09-07 00:10:35
End at: 2018-09-07 00:11:05
Local clock offset: 0.112 ms
Remote clock offset: 0.058 ms


# Below is generated by plot.py at 2018-09-07 01:36:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 487.59 Mbit/s
95th percentile per-packet one-way delay: 159.927 ms
Loss rate: 6.36%
-- Flow 1:
Average throughput: 487.59 Mbit/s
95th percentile per-packet one-way delay: 159.927 ms
Loss rate: 6.36%
```
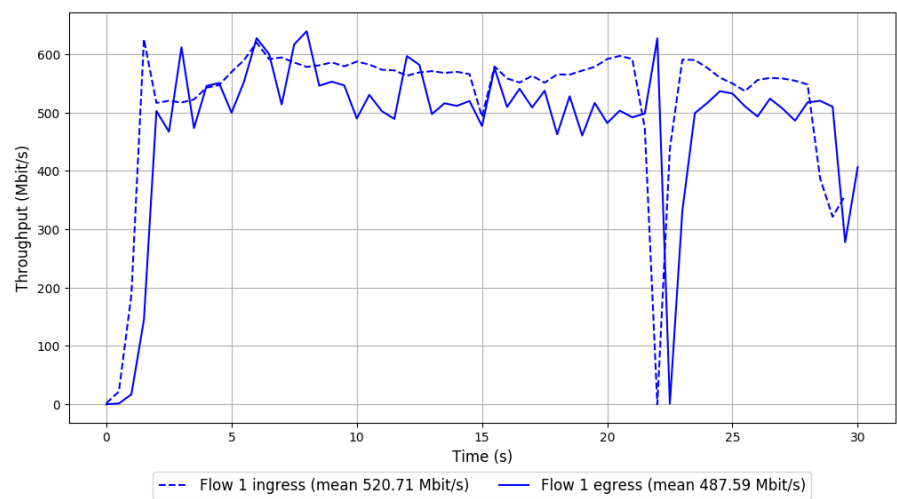
Run 5: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 520.71 Mbit/s) — — — Flow 1 egress (mean 487.59 Mbit/s)
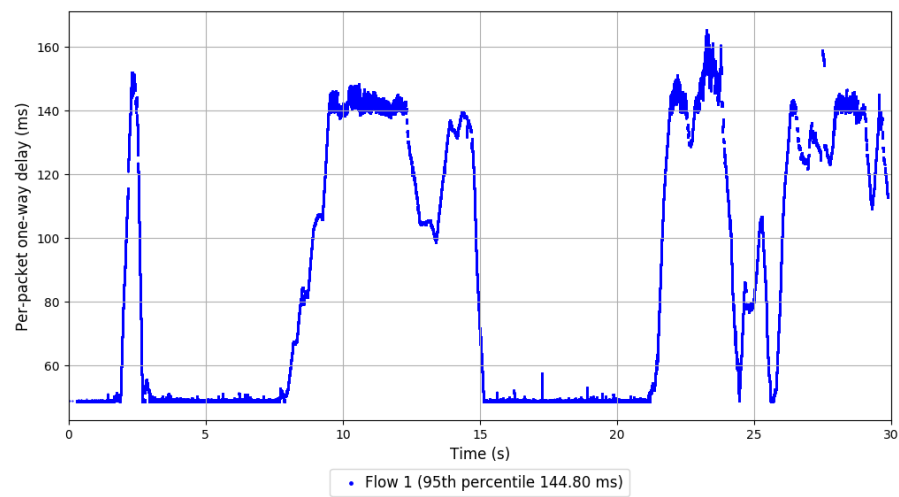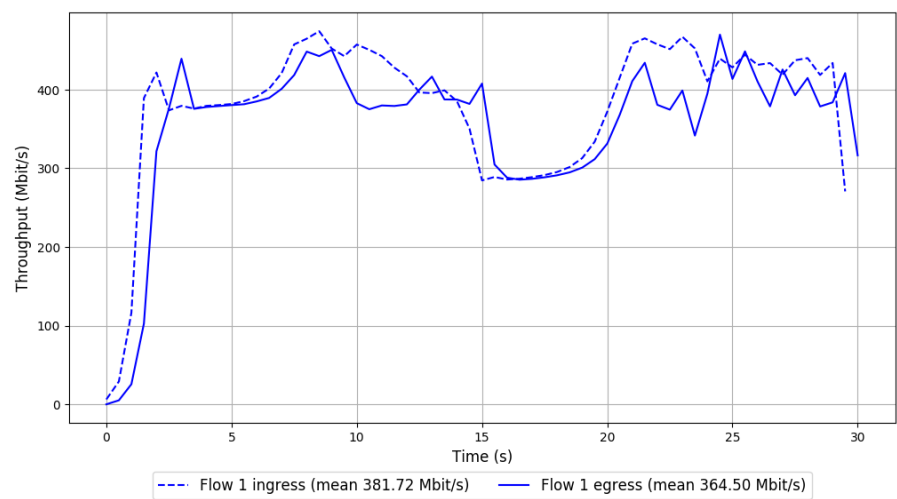

• Flow 1 (95th percentile 159.93 ms)

```
Run 1: Statistics of PCC-Expr

Start at: 2018-09-06 22:30:28
End at: 2018-09-06 22:30:58
Local clock offset: -0.029 ms
Remote clock offset: -0.102 ms

# Below is generated by plot.py at 2018-09-07 01:36:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 364.50 Mbit/s
95th percentile per-packet one-way delay: 144.801 ms
Loss rate: 4.51%
-- Flow 1:
Average throughput: 364.50 Mbit/s
95th percentile per-packet one-way delay: 144.801 ms
Loss rate: 4.51%
```
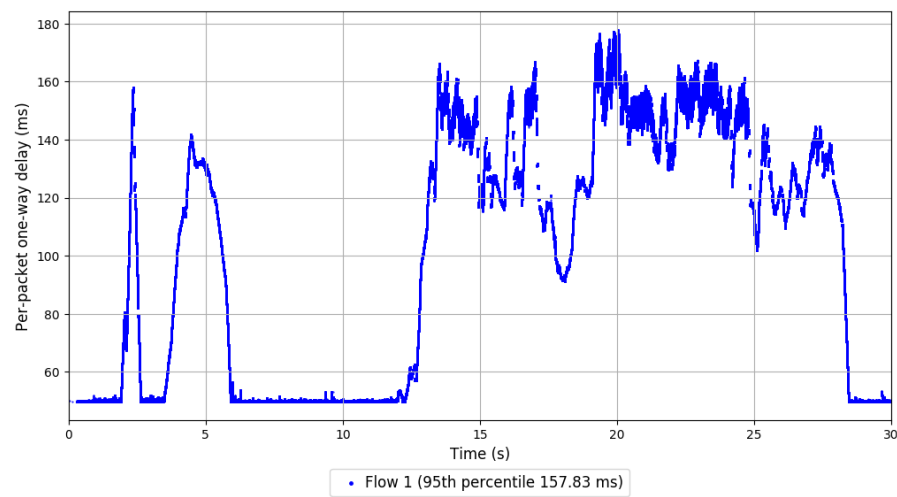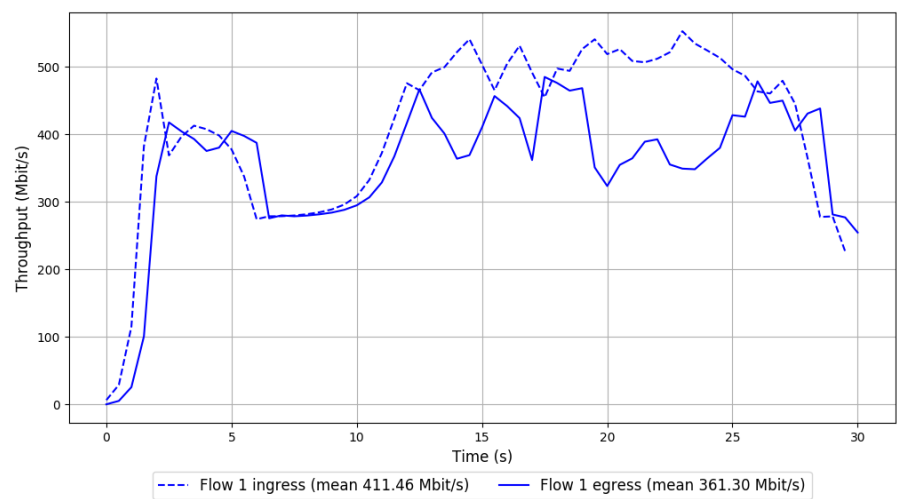
Run 1: Report of PCC-Expr — Data Link

```
Run 2: Statistics of PCC-Expr

Start at: 2018-09-06 22:56:20
End at: 2018-09-06 22:56:50
Local clock offset: -0.451 ms
Remote clock offset: -0.087 ms


# Below is generated by plot.py at 2018-09-07 01:36:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 361.30 Mbit/s
95th percentile per-packet one-way delay: 157.830 ms
Loss rate: 12.19%
-- Flow 1:
Average throughput: 361.30 Mbit/s
95th percentile per-packet one-way delay: 157.830 ms
Loss rate: 12.19%
```

Run 2: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 411.46 Mbit/s) — Flow 1 egress (mean 361.30 Mbit/s)
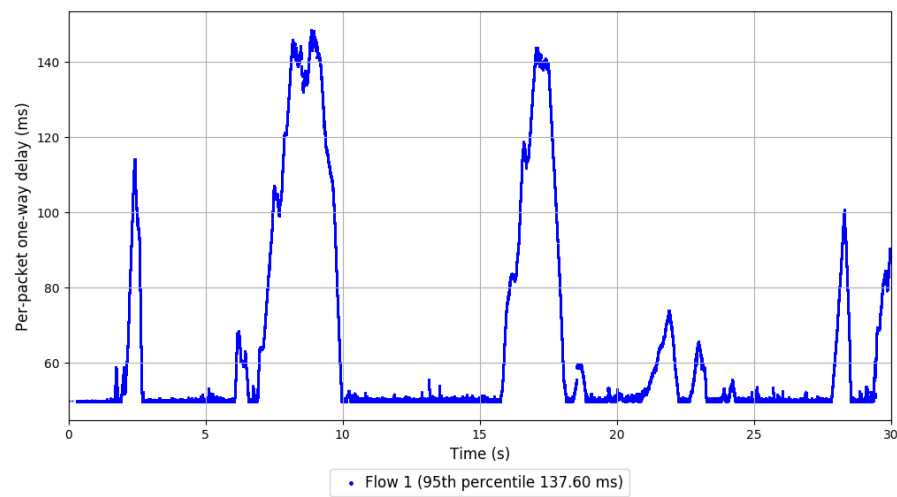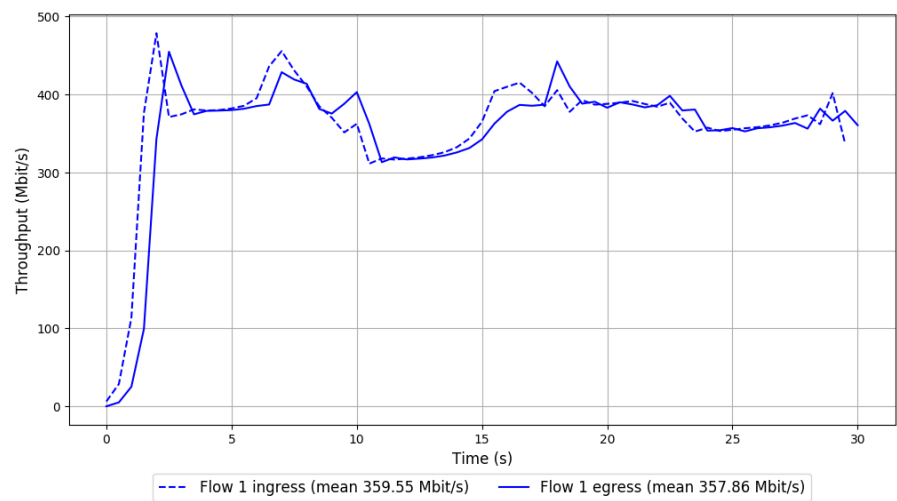

• Flow 1 (95th percentile 157.83 ms)

```
Run 3: Statistics of PCC-Expr

Start at: 2018-09-06 23:21:55
End at: 2018-09-06 23:22:25
Local clock offset: 0.428 ms
Remote clock offset: -0.011 ms


# Below is generated by plot.py at 2018-09-07 01:36:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 357.86 Mbit/s
95th percentile per-packet one-way delay: 137.596 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 357.86 Mbit/s
95th percentile per-packet one-way delay: 137.596 ms
Loss rate: 0.47%
```

Run 3: Report of PCC-Expr — Data Link

```
Run 4: Statistics of PCC-Expr

Start at: 2018-09-06 23:47:54
End at: 2018-09-06 23:48:24
Local clock offset: 0.269 ms
Remote clock offset: 0.04 ms


# Below is generated by plot.py at 2018-09-07 01:38:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 354.36 Mbit/s
95th percentile per-packet one-way delay: 140.243 ms
Loss rate: 1.52%
-- Flow 1:
Average throughput: 354.36 Mbit/s
95th percentile per-packet one-way delay: 140.243 ms
Loss rate: 1.52%
```
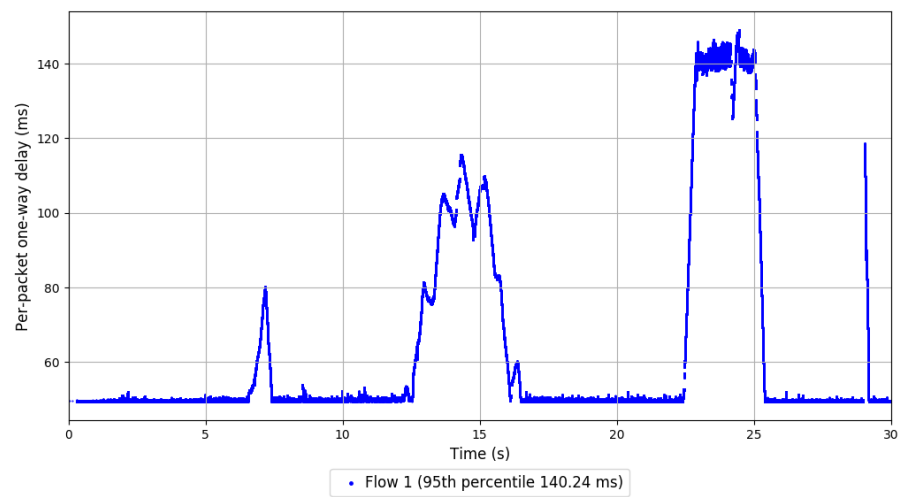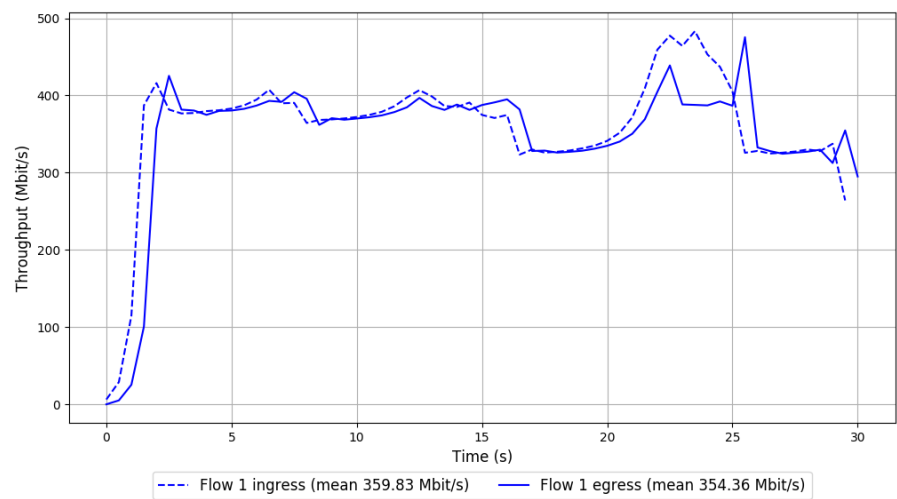
Run 4: Report of PCC-Expr — Data Link

```
Run 5: Statistics of PCC-Expr

Start at: 2018-09-07 00:13:47
End at: 2018-09-07 00:14:17
Local clock offset: -0.233 ms
Remote clock offset: 0.021 ms


# Below is generated by plot.py at 2018-09-07 01:38:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 340.82 Mbit/s
95th percentile per-packet one-way delay: 141.249 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 340.82 Mbit/s
95th percentile per-packet one-way delay: 141.249 ms
Loss rate: 0.72%
```
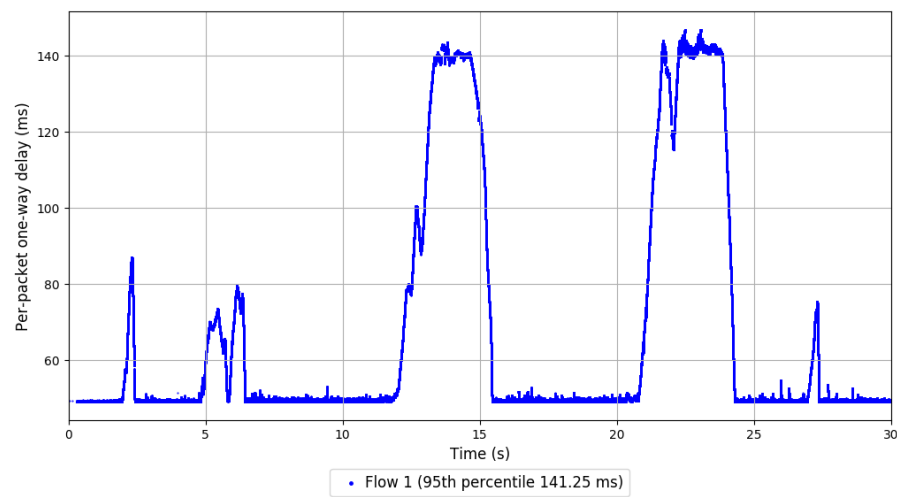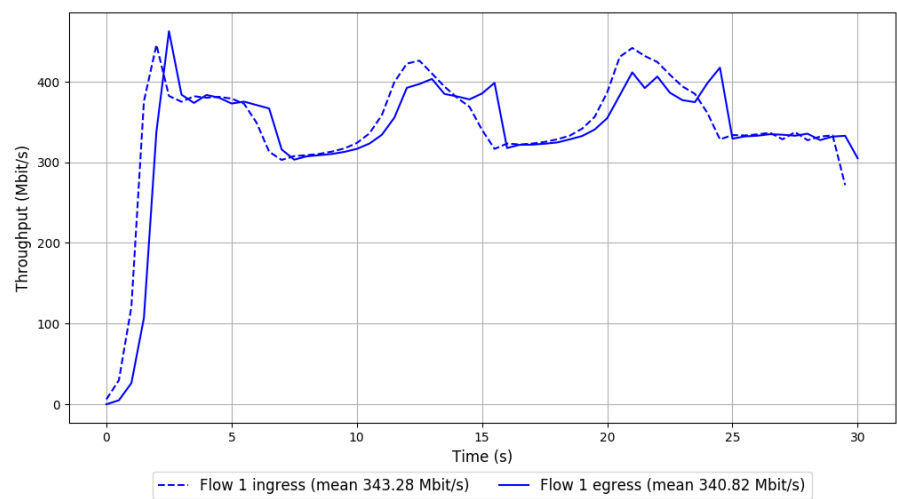
Run 5: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 343.28 Mbit/s) --- Flow 1 egress (mean 340.82 Mbit/s)

• Flow 1 (95th percentile 141.25 ms)

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-09-06 22:24:43
End at: 2018-09-06 22:25:13
Local clock offset: -0.016 ms
Remote clock offset: -0.079 ms
```
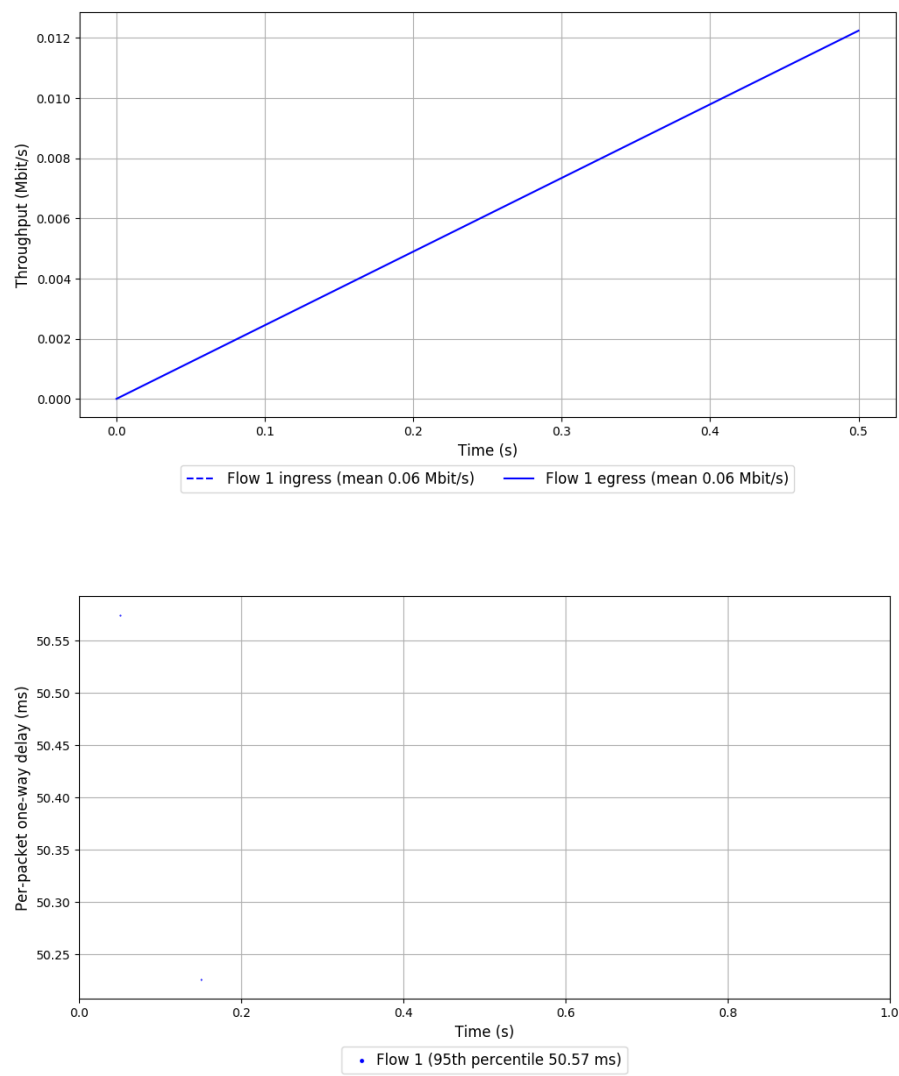
Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-09-06 22:50:33
End at: 2018-09-06 22:51:03
Local clock offset: -0.474 ms
Remote clock offset: -0.043 ms


# Below is generated by plot.py at 2018-09-07 01:38:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 53.14 Mbit/s
95th percentile per-packet one-way delay: 49.324 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 53.14 Mbit/s
95th percentile per-packet one-way delay: 49.324 ms
Loss rate: 0.00%
```
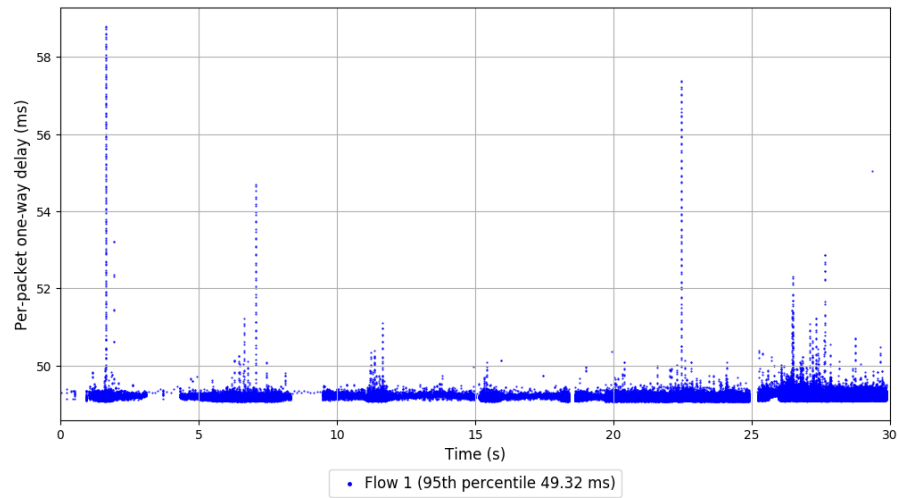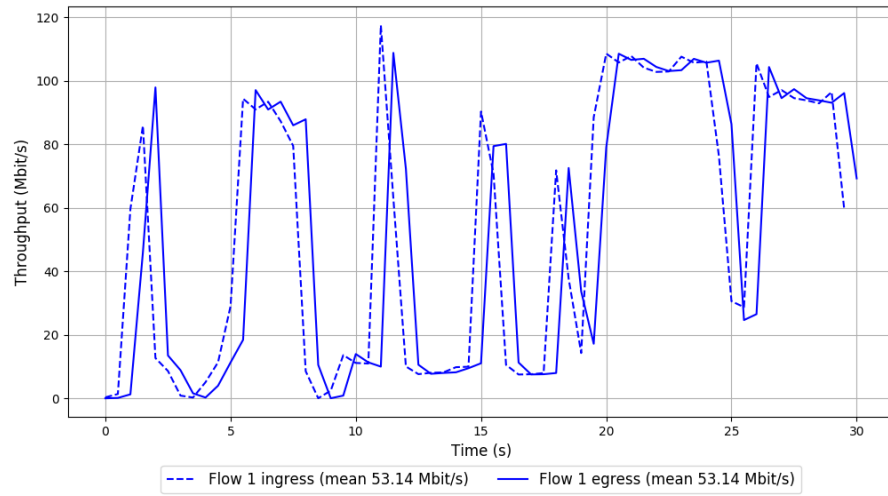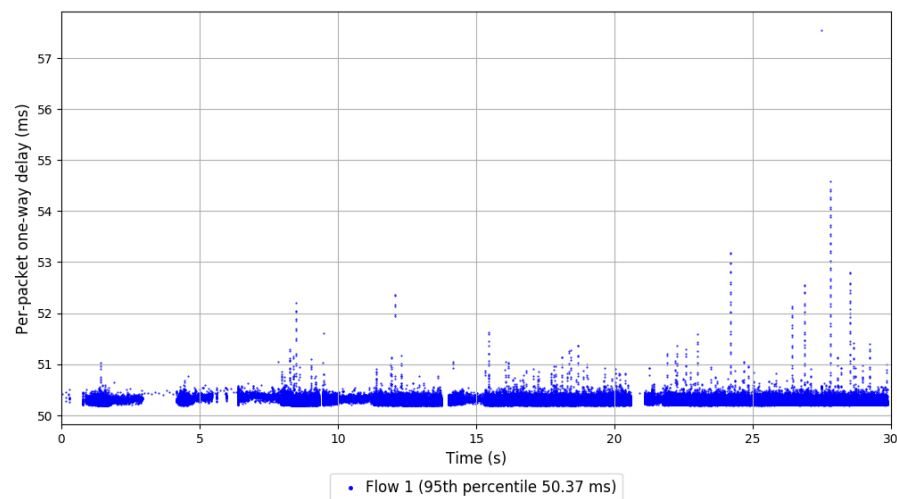
Run 2: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 53.14 Mbit/s) ----- Flow 1 egress (mean 53.14 Mbit/s)

• Flow 1 (95th percentile 49.32 ms)

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-09-06 23:16:09
End at: 2018-09-06 23:16:39
Local clock offset: -0.067 ms
Remote clock offset: -0.042 ms


# Below is generated by plot.py at 2018-09-07 01:38:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 69.54 Mbit/s
95th percentile per-packet one-way delay: 50.365 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 69.54 Mbit/s
95th percentile per-packet one-way delay: 50.365 ms
Loss rate: 0.00%
```
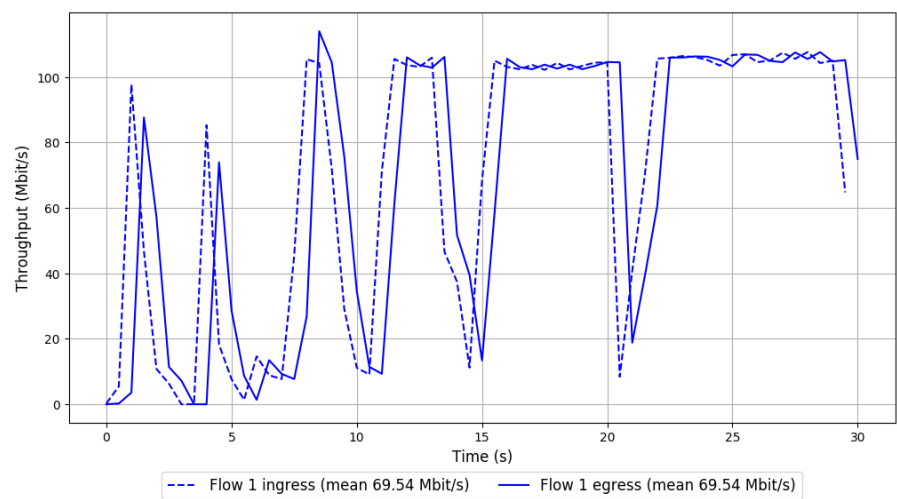
Run 3: Report of QUIC Cubic — Data Link

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-09-06 23:42:02
End at: 2018-09-06 23:42:32
Local clock offset: -0.094 ms
Remote clock offset: -0.021 ms


# Below is generated by plot.py at 2018-09-07 01:38:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 88.44 Mbit/s
95th percentile per-packet one-way delay: 49.873 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 88.44 Mbit/s
95th percentile per-packet one-way delay: 49.873 ms
Loss rate: 0.00%
```
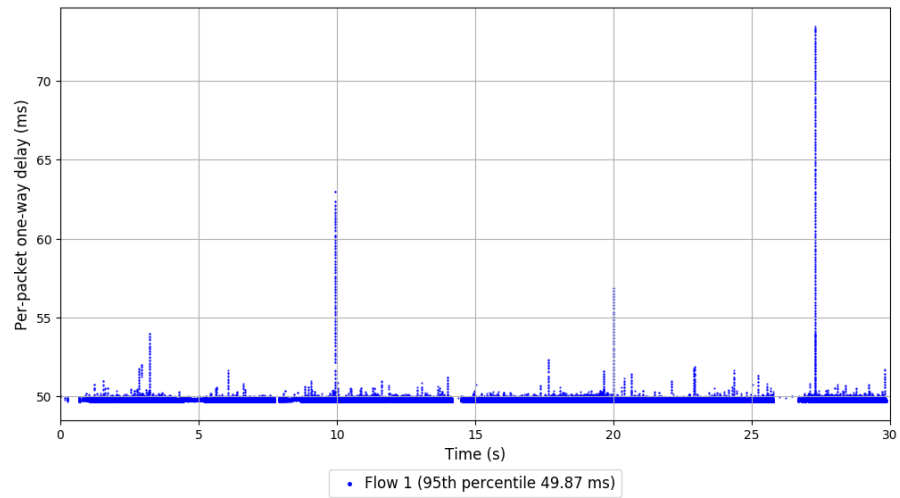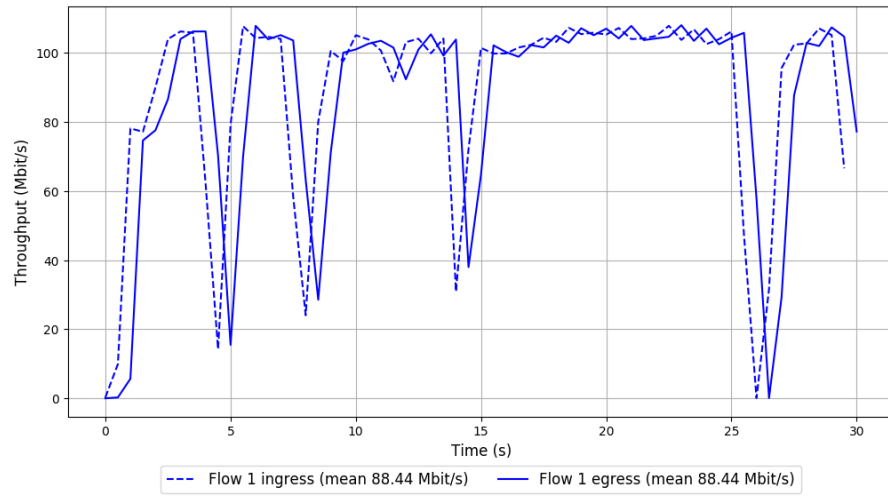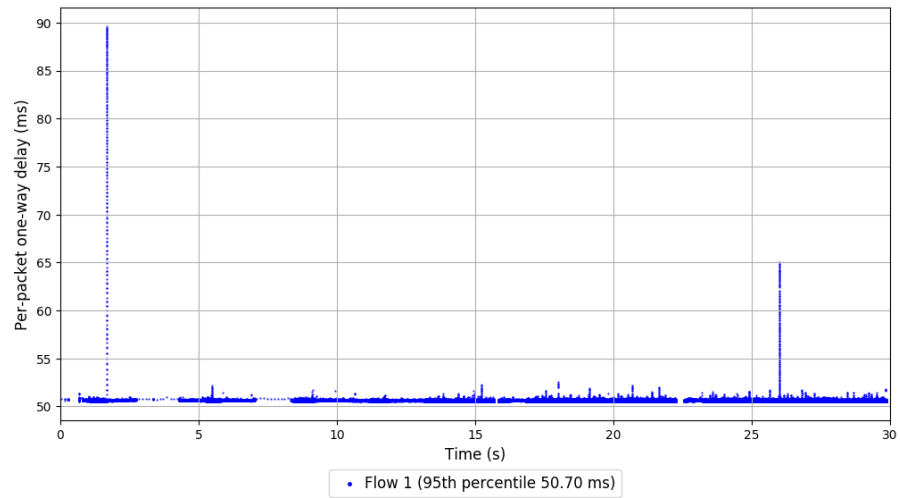
Run 4: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 88.44 Mbit/s)   Flow 1 egress (mean 88.44 Mbit/s)

• Flow 1 (95th percentile 49.87 ms)

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-09-07 00:07:58
End at: 2018-09-07 00:08:28
Local clock offset: -0.241 ms
Remote clock offset: 0.02 ms


# Below is generated by plot.py at 2018-09-07 01:38:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 63.04 Mbit/s
95th percentile per-packet one-way delay: 50.703 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 63.04 Mbit/s
95th percentile per-packet one-way delay: 50.703 ms
Loss rate: 0.00%
```
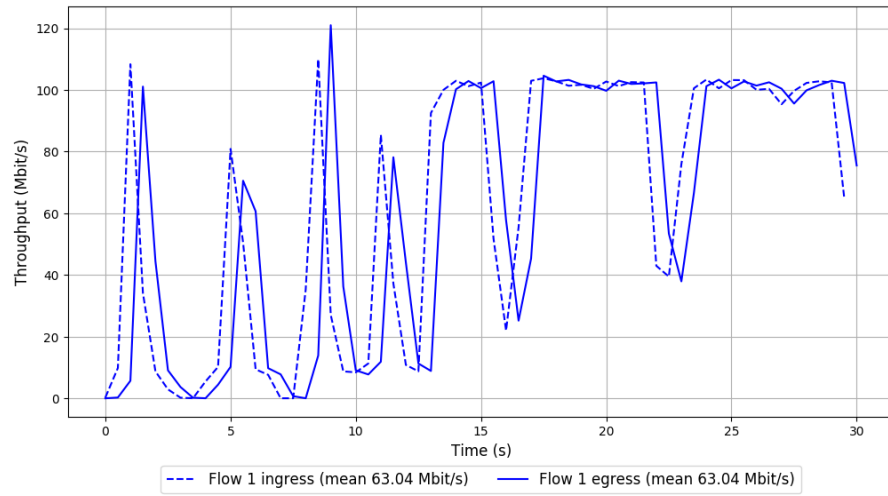
Run 5: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 63.04 Mbit/s)   Flow 1 egress (mean 63.04 Mbit/s)

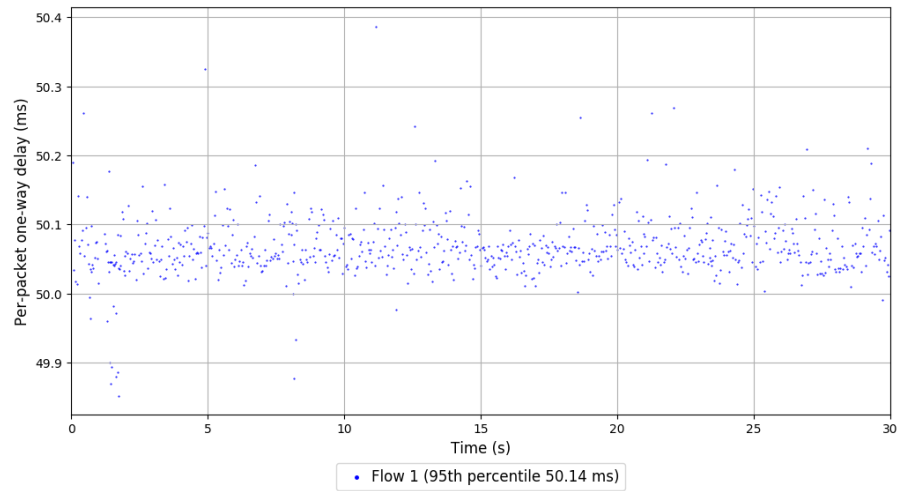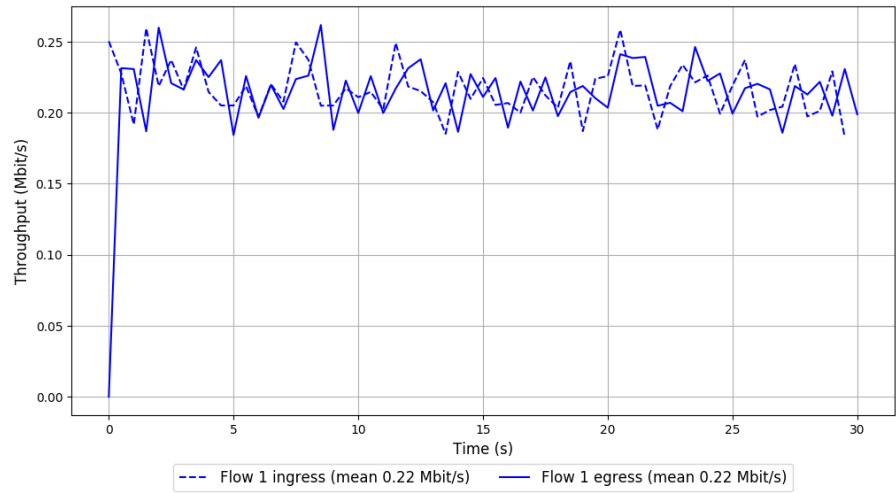

Flow 1 (95th percentile 50.70 ms)

```
Run 1: Statistics of SCReAM

Start at: 2018-09-06 22:20:29
End at: 2018-09-06 22:20:59
Local clock offset: 0.336 ms
Remote clock offset: -0.042 ms


# Below is generated by plot.py at 2018-09-07 01:38:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 50.142 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 50.142 ms
Loss rate: 0.00%
```

Run 1: Report of SCReAM — Data Link

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

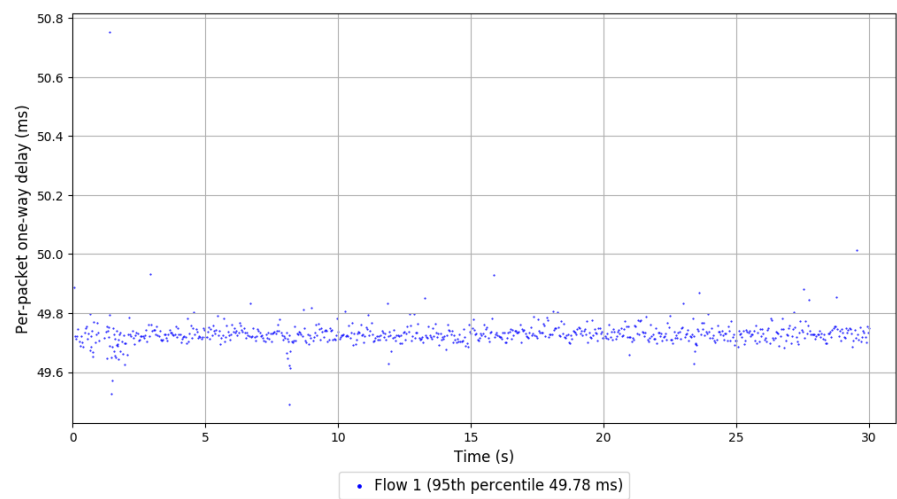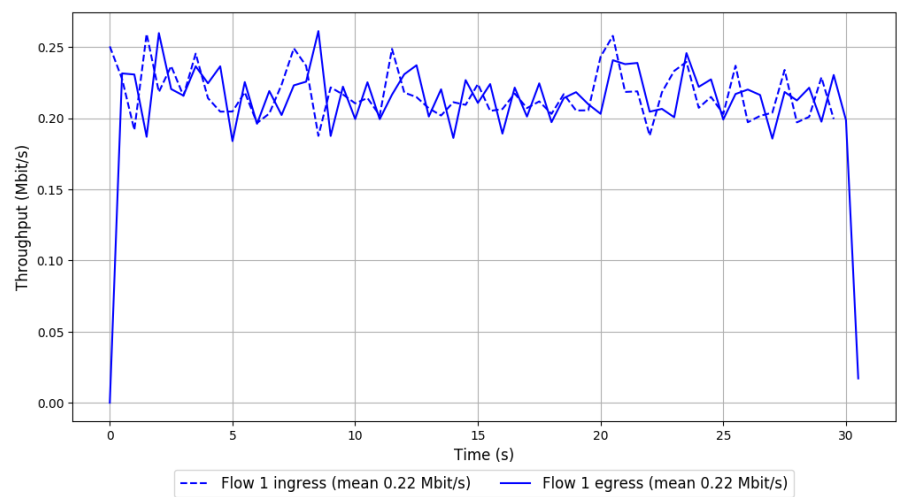Flow 1 (95th percentile 50.14 ms)

```
Run 2: Statistics of SCReAM

Start at: 2018-09-06 22:46:19
End at: 2018-09-06 22:46:49
Local clock offset: -0.082 ms
Remote clock offset: -0.056 ms


# Below is generated by plot.py at 2018-09-07 01:38:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 49.780 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 49.780 ms
Loss rate: 0.00%
```

Run 2: Report of SCReAM — Data Link

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

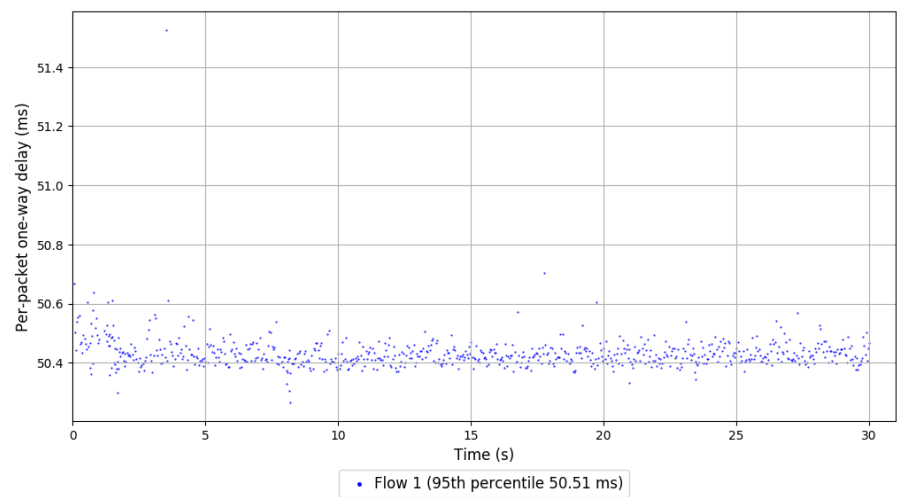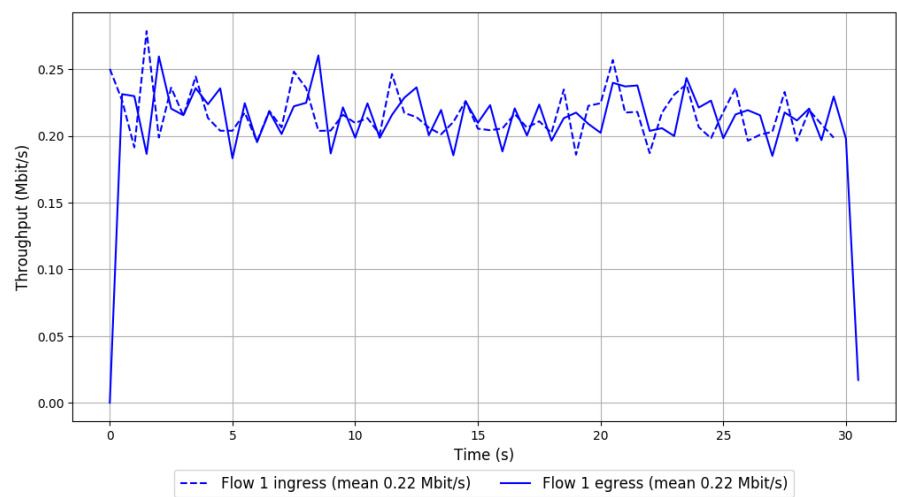Flow 1 (95th percentile 49.78 ms)

```
Run 3: Statistics of SCReAM

Start at: 2018-09-06 23:11:57
End at: 2018-09-06 23:12:27
Local clock offset: 0.186 ms
Remote clock offset: -0.117 ms


# Below is generated by plot.py at 2018-09-07 01:38:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 50.505 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 50.505 ms
Loss rate: 0.00%
```
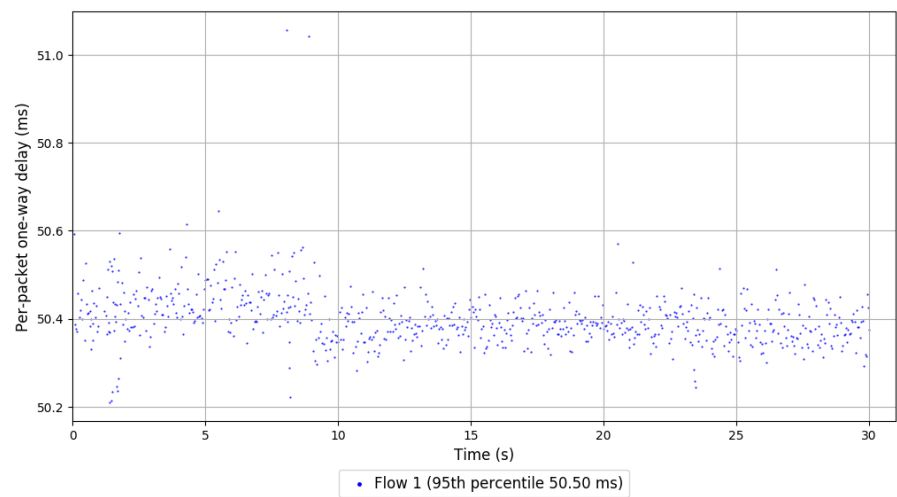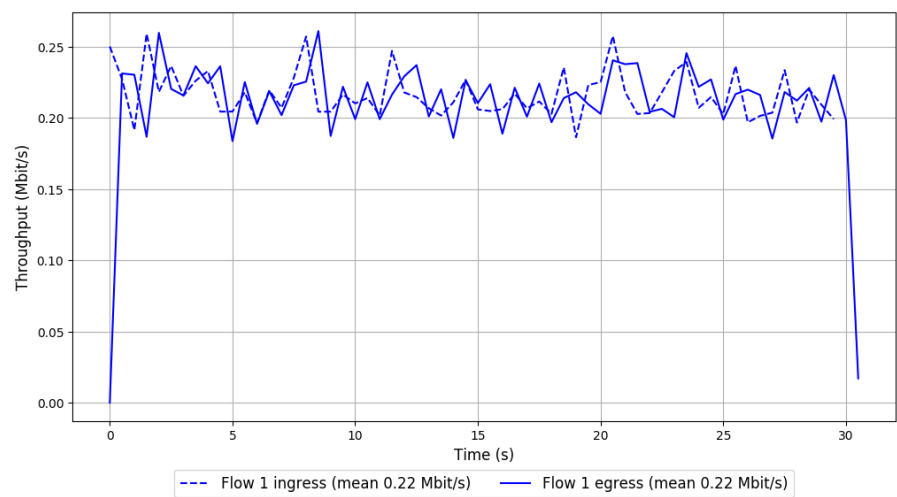
Run 3: Report of SCReAM — Data Link

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

Flow 1 (95th percentile 50.51 ms)

```
Run 4: Statistics of SCReAM

Start at: 2018-09-06 23:37:44
End at: 2018-09-06 23:38:14
Local clock offset: 0.179 ms
Remote clock offset: 0.001 ms


# Below is generated by plot.py at 2018-09-07 01:38:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 50.503 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 50.503 ms
Loss rate: 0.00%
```
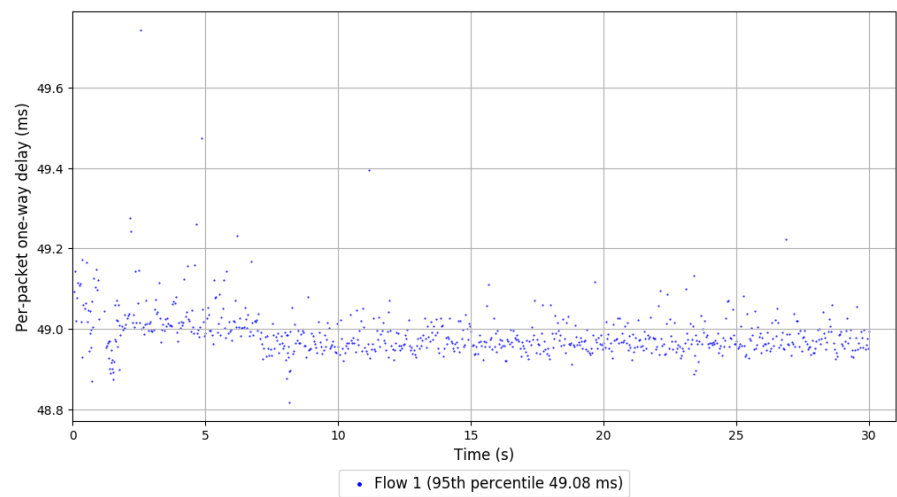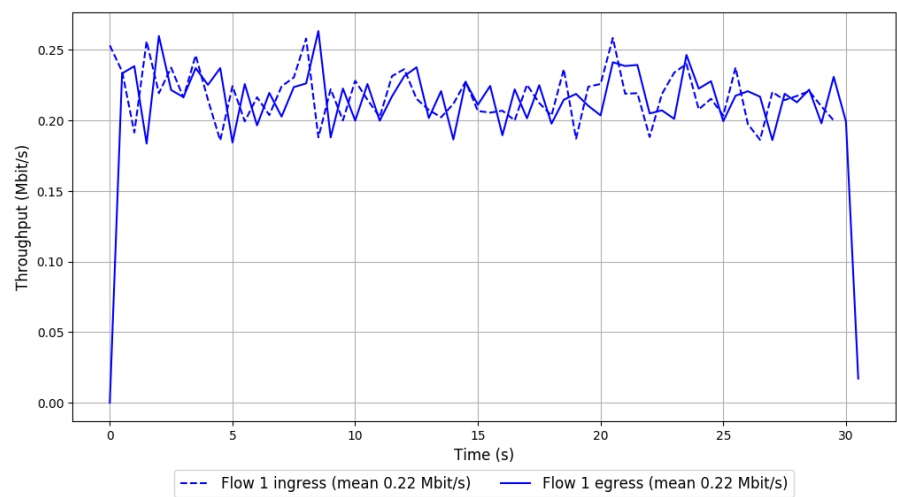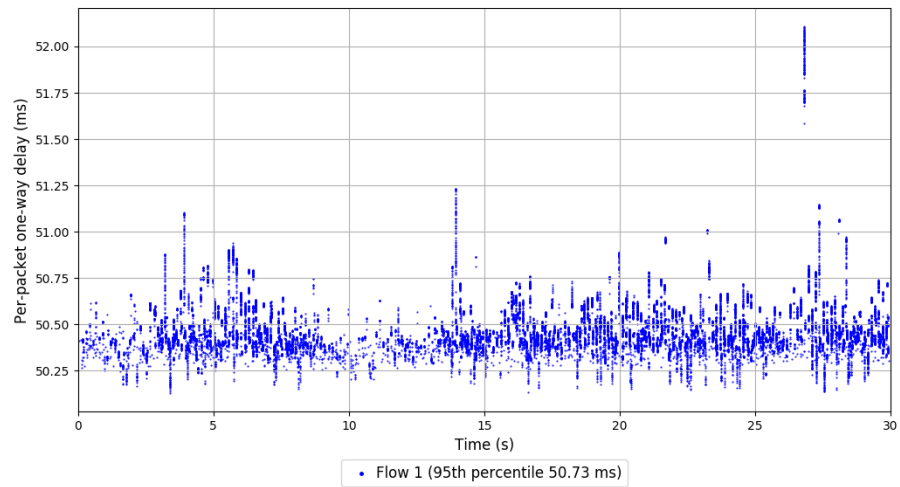
Run 4: Report of SCReAM — Data Link

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

Flow 1 (95th percentile 50.50 ms)

```
Run 5: Statistics of SCReAM

Start at: 2018-09-07 00:03:40
End at: 2018-09-07 00:04:10
Local clock offset: 0.128 ms
Remote clock offset: 0.044 ms


# Below is generated by plot.py at 2018-09-07 01:38:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 49.080 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 49.080 ms
Loss rate: 0.00%
```

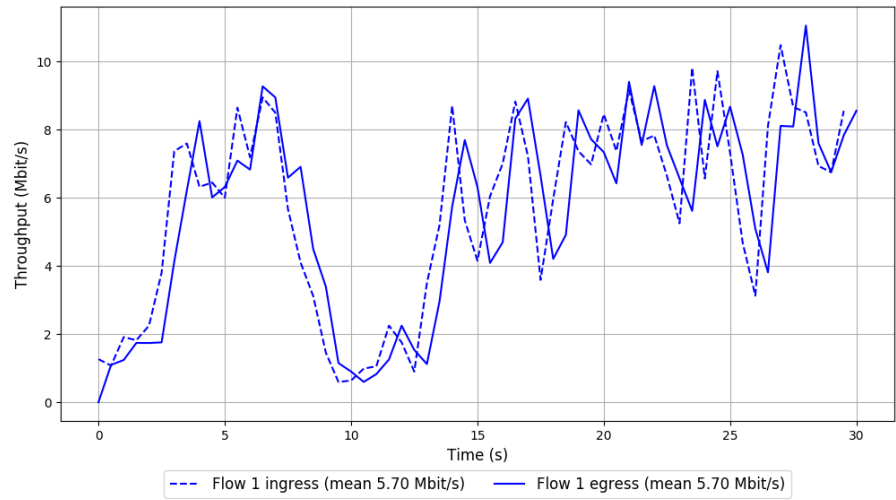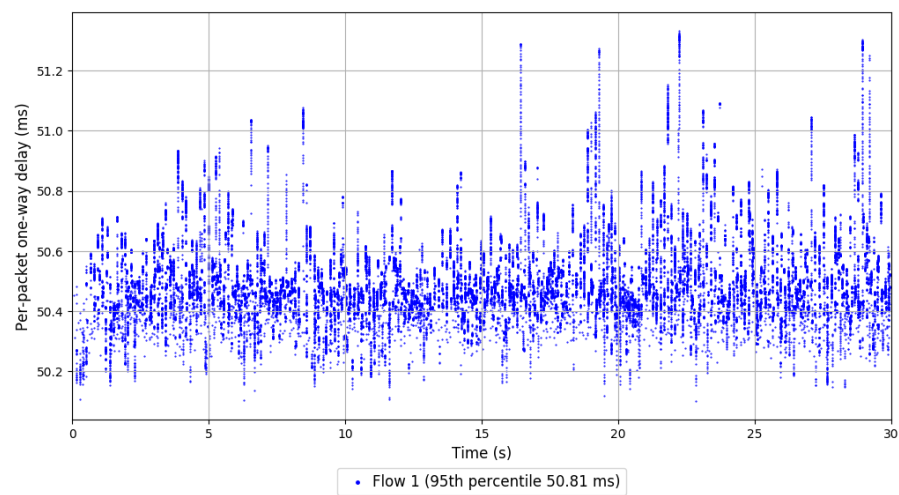Run 5: Report of SCReAM — Data Link

```
Run 1: Statistics of Sprout

Start at: 2018-09-06 22:19:22
End at: 2018-09-06 22:19:52
Local clock offset: -0.02 ms
Remote clock offset: -0.065 ms


# Below is generated by plot.py at 2018-09-07 01:38:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.70 Mbit/s
95th percentile per-packet one-way delay: 50.734 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 5.70 Mbit/s
95th percentile per-packet one-way delay: 50.734 ms
Loss rate: 0.00%
```

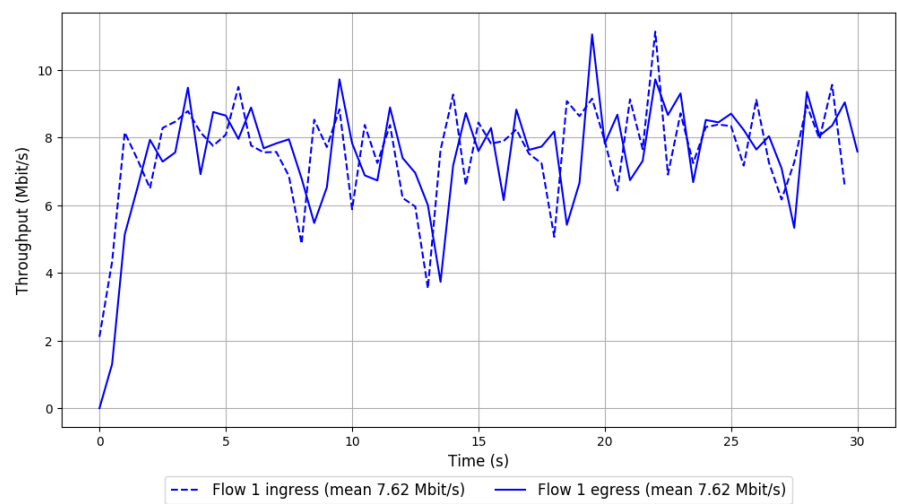Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-09-06 22:45:12
End at: 2018-09-06 22:45:42
Local clock offset: 0.244 ms
Remote clock offset: -0.052 ms


# Below is generated by plot.py at 2018-09-07 01:38:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.62 Mbit/s
95th percentile per-packet one-way delay: 50.806 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 7.62 Mbit/s
95th percentile per-packet one-way delay: 50.806 ms
Loss rate: 0.00%
```

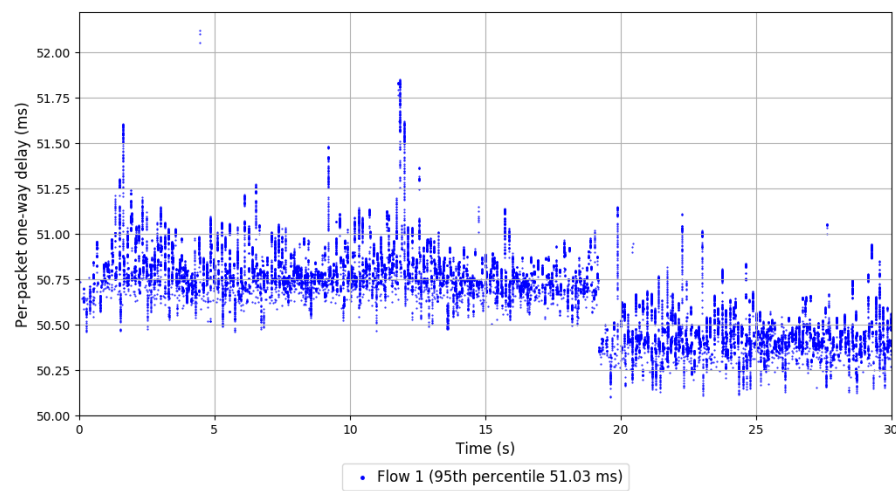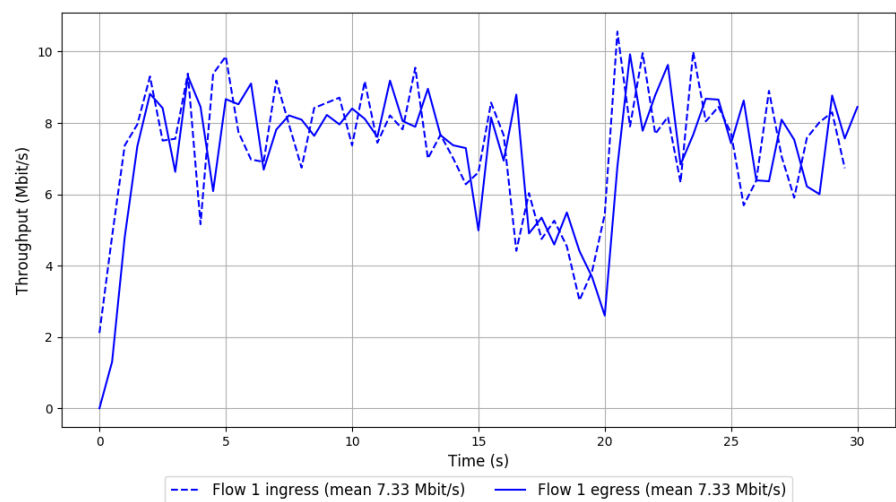Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-09-06 23:10:49
End at: 2018-09-06 23:11:19
Local clock offset: -0.159 ms
Remote clock offset: -0.076 ms


# Below is generated by plot.py at 2018-09-07 01:38:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.33 Mbit/s
95th percentile per-packet one-way delay: 51.029 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 7.33 Mbit/s
95th percentile per-packet one-way delay: 51.029 ms
Loss rate: 0.00%
```

Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2018-09-06 23:36:36
End at: 2018-09-06 23:37:06
Local clock offset: 0.576 ms
Remote clock offset: 0.032 ms


# Below is generated by plot.py at 2018-09-07 01:38:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.14 Mbit/s
95th percentile per-packet one-way delay: 49.774 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 7.14 Mbit/s
95th percentile per-packet one-way delay: 49.774 ms
Loss rate: 0.00%
```
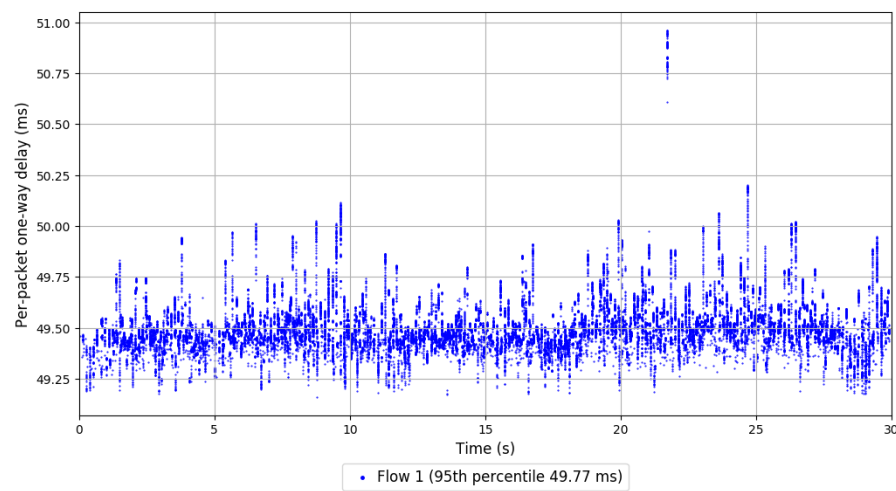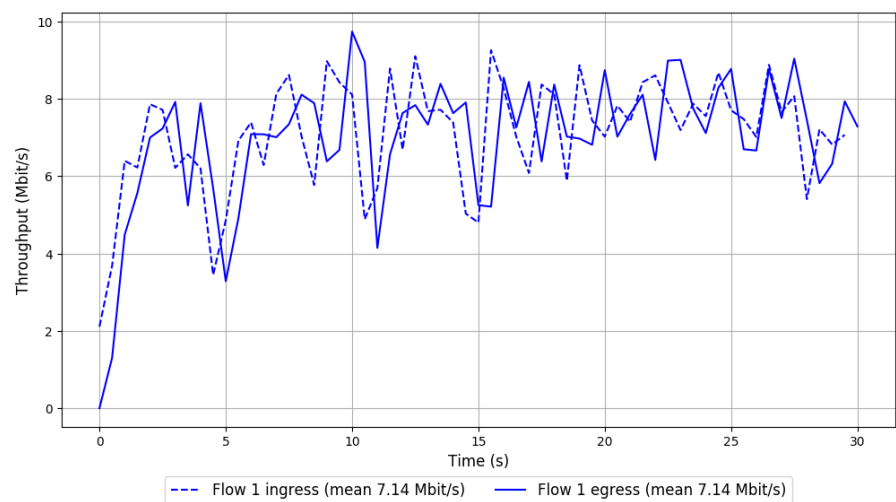
Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-09-07 00:02:33
End at: 2018-09-07 00:03:03
Local clock offset: 0.134 ms
Remote clock offset: 0.009 ms


# Below is generated by plot.py at 2018-09-07 01:38:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.07 Mbit/s
95th percentile per-packet one-way delay: 51.082 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 7.07 Mbit/s
95th percentile per-packet one-way delay: 51.082 ms
Loss rate: 0.00%
```
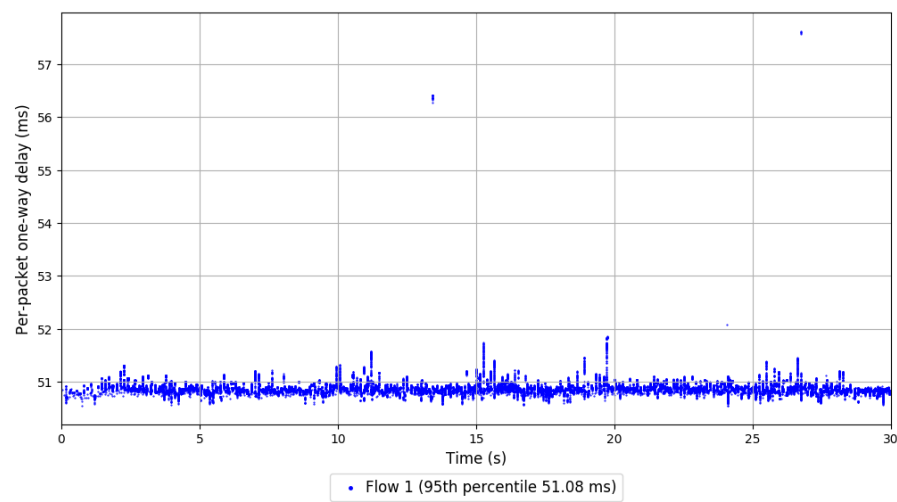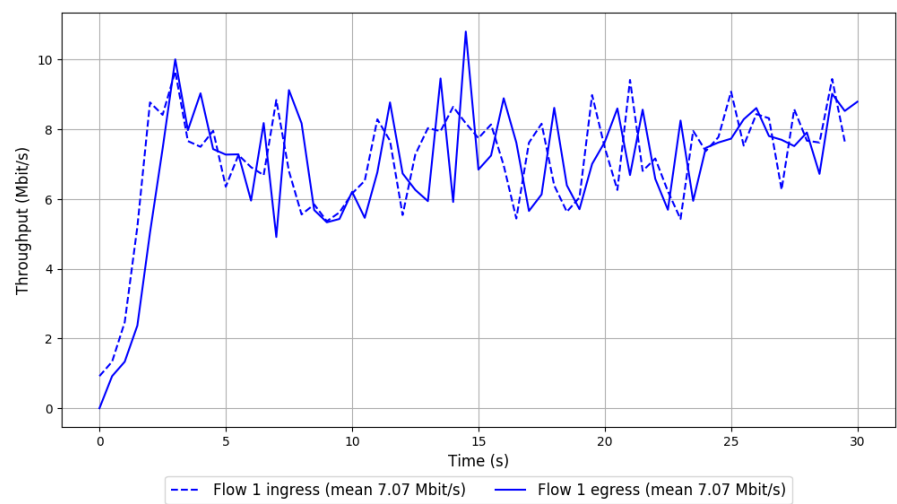
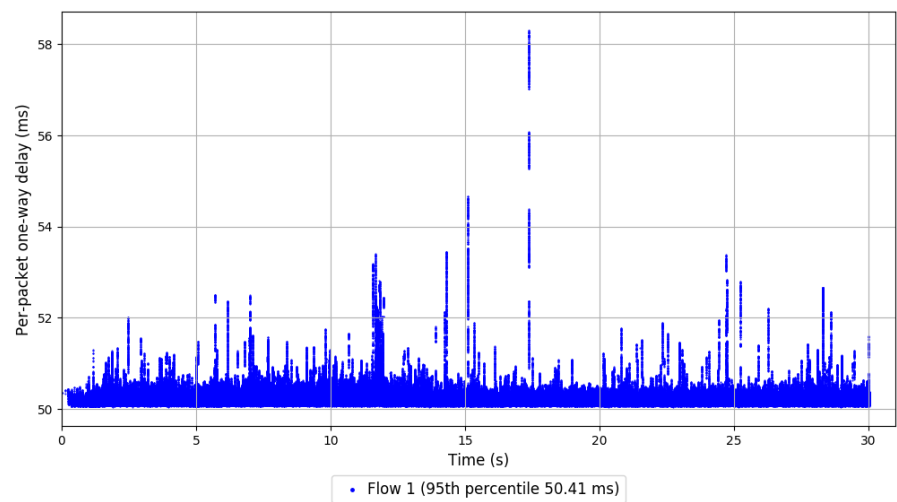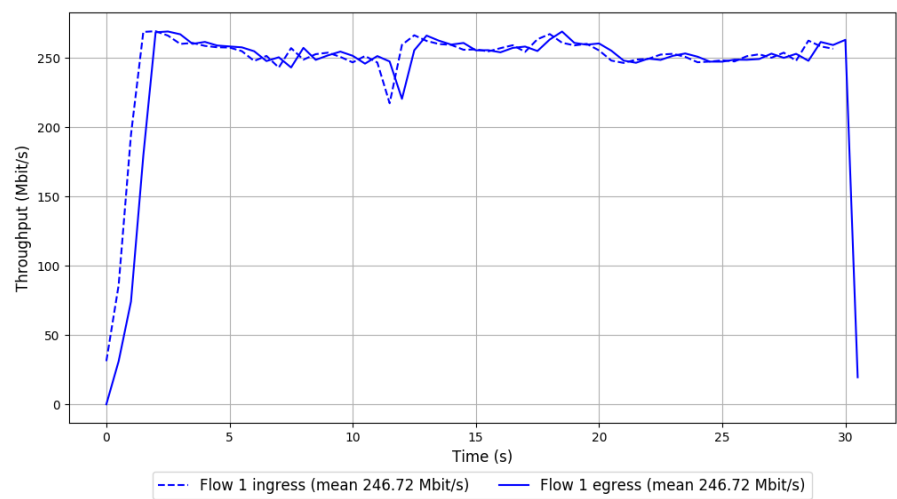Run 5: Report of Sprout — Data Link

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

Start at: 2018-09-06 22:25:49
End at: 2018-09-06 22:26:19
Local clock offset: -0.04 ms
Remote clock offset: -0.093 ms


# Below is generated by plot.py at 2018-09-07 01:41:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 246.72 Mbit/s
95th percentile per-packet one-way delay: 50.408 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 246.72 Mbit/s
95th percentile per-packet one-way delay: 50.408 ms
Loss rate: 0.00%
```

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

Flow 1 ingress (mean 246.72 Mbit/s) ----   Flow 1 egress (mean 246.72 Mbit/s) ——
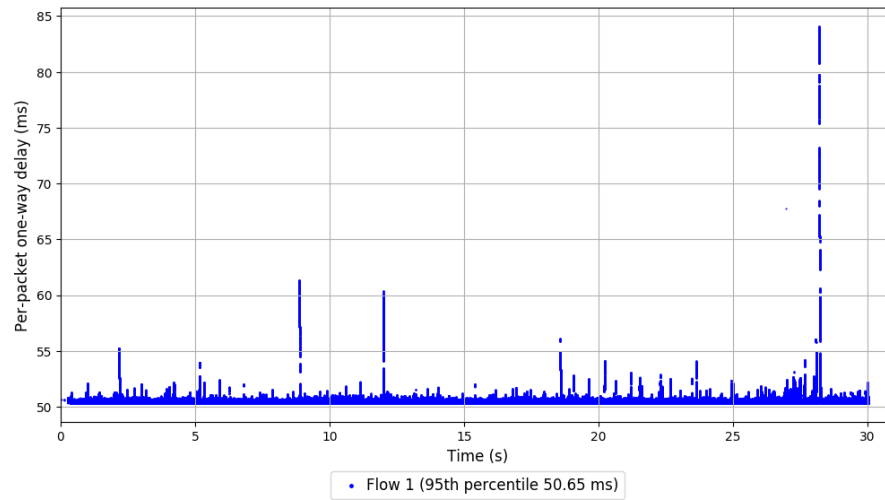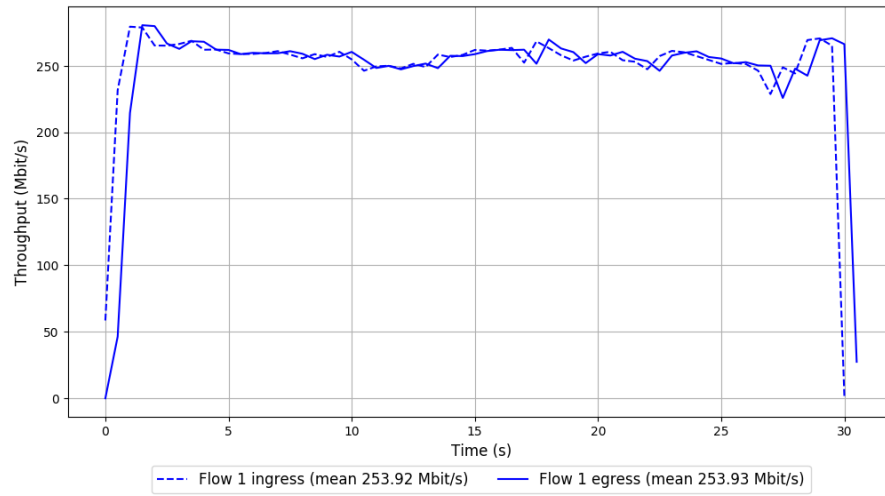

Flow 1 (95th percentile 50.41 ms)

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

Start at: 2018-09-06 22:51:42
End at: 2018-09-06 22:52:12
Local clock offset: -0.097 ms
Remote clock offset: -0.113 ms


# Below is generated by plot.py at 2018-09-07 01:42:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 253.93 Mbit/s
95th percentile per-packet one-way delay: 50.653 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 253.93 Mbit/s
95th percentile per-packet one-way delay: 50.653 ms
Loss rate: 0.00%
```

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

Flow 1 ingress (mean 253.92 Mbit/s)   Flow 1 egress (mean 253.93 Mbit/s)
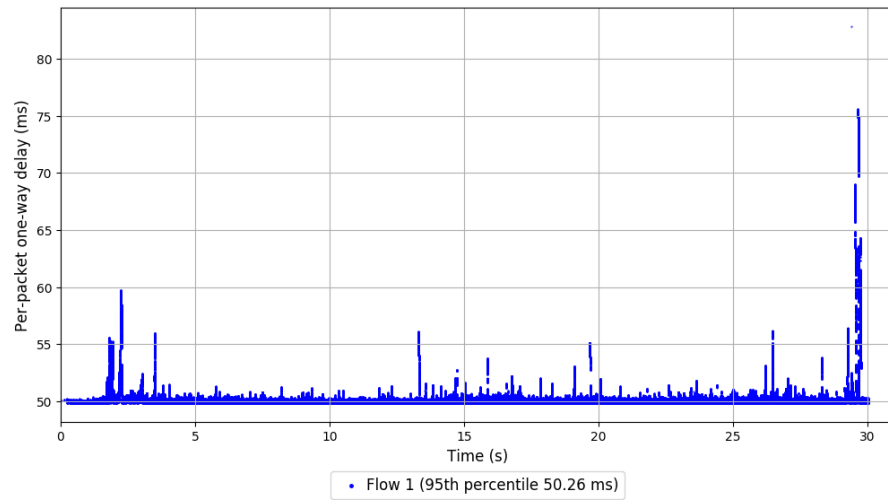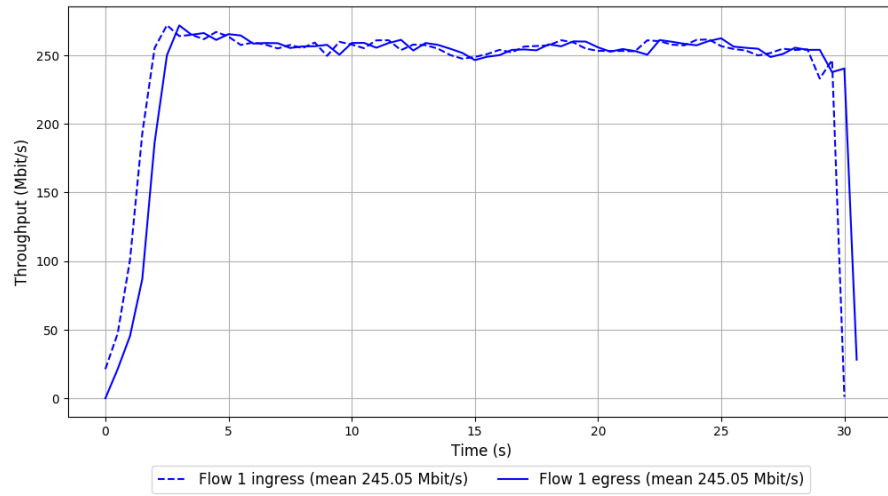

Flow 1 (95th percentile 50.65 ms)

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

Start at: 2018-09-06 23:17:19
End at: 2018-09-06 23:17:49
Local clock offset: -0.393 ms
Remote clock offset: -0.061 ms


# Below is generated by plot.py at 2018-09-07 01:42:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 245.05 Mbit/s
95th percentile per-packet one-way delay: 50.256 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 245.05 Mbit/s
95th percentile per-packet one-way delay: 50.256 ms
Loss rate: 0.00%
```
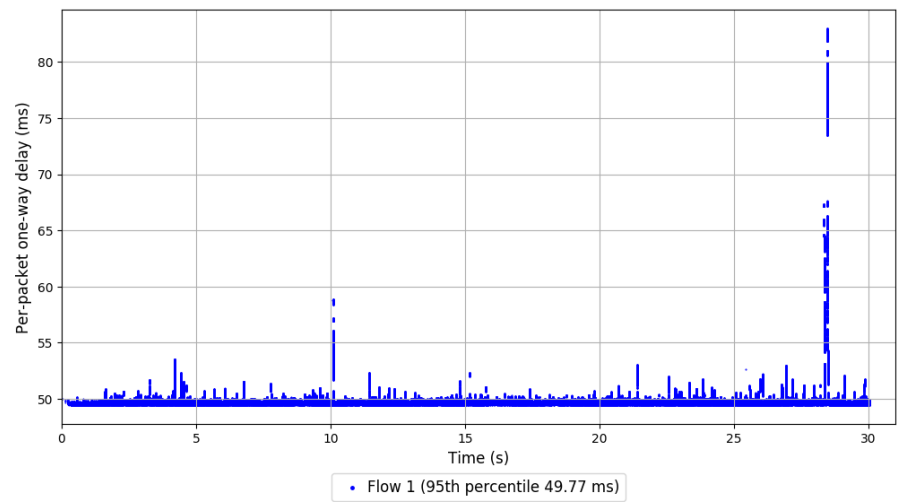
Run 3: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 245.05 Mbit/s) — Flow 1 egress (mean 245.05 Mbit/s)

Flow 1 (95th percentile 50.26 ms)

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

Start at: 2018-09-06 23:43:13
End at: 2018-09-06 23:43:43
Local clock offset: 0.236 ms
Remote clock offset: 0.05 ms


# Below is generated by plot.py at 2018-09-07 01:42:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 248.87 Mbit/s
95th percentile per-packet one-way delay: 49.773 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 248.87 Mbit/s
95th percentile per-packet one-way delay: 49.773 ms
Loss rate: 0.00%
```
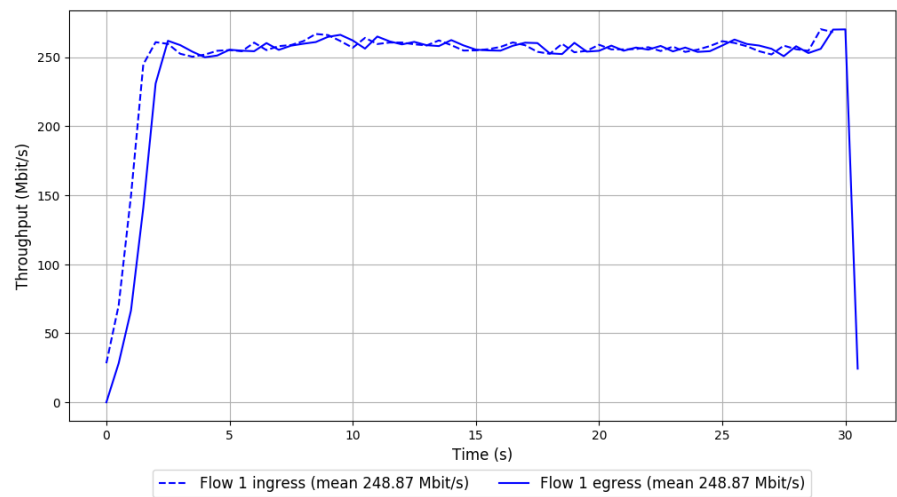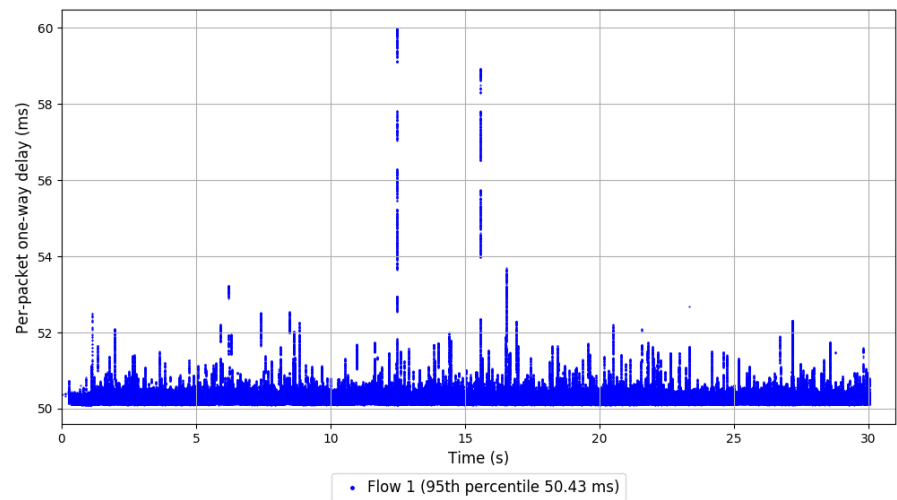
Run 4: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 248.87 Mbit/s) --- Flow 1 egress (mean 248.87 Mbit/s)

• Flow 1 (95th percentile 49.77 ms)

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

Start at: 2018-09-07 00:09:08
End at: 2018-09-07 00:09:38
Local clock offset: 0.496 ms
Remote clock offset: 0.084 ms


# Below is generated by plot.py at 2018-09-07 01:42:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 251.15 Mbit/s
95th percentile per-packet one-way delay: 50.426 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 251.15 Mbit/s
95th percentile per-packet one-way delay: 50.426 ms
Loss rate: 0.00%
```
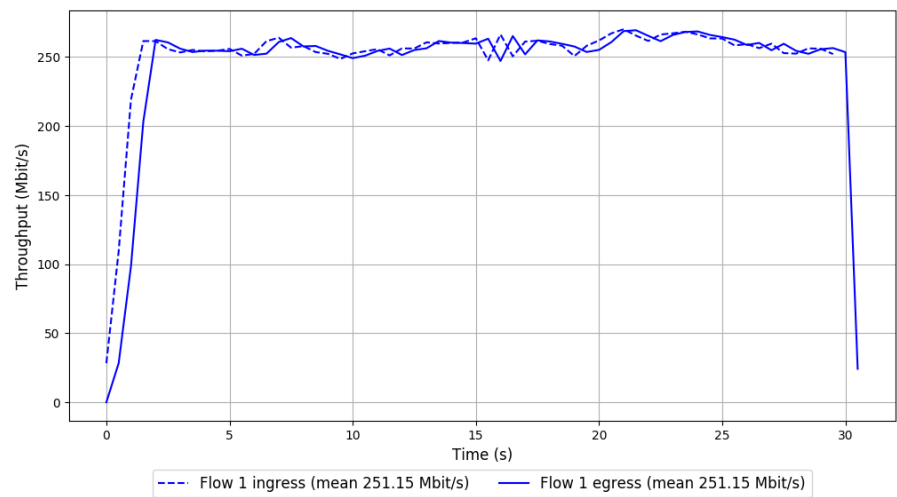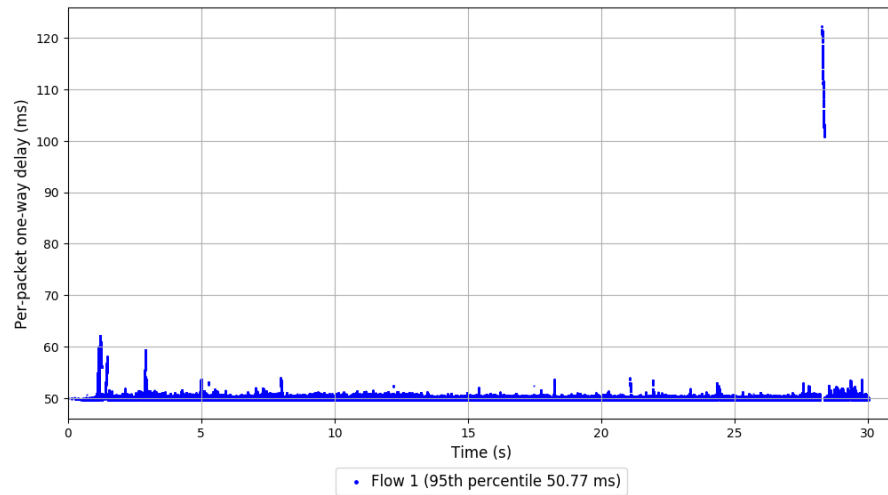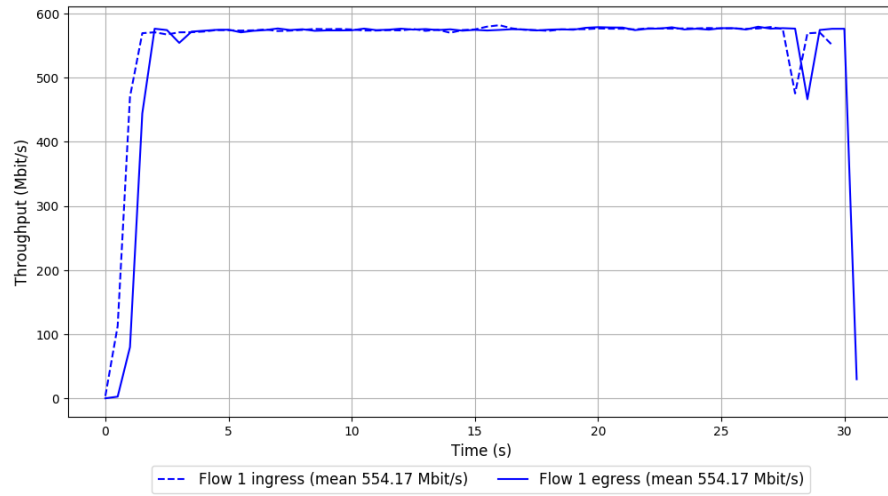
Run 5: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 251.15 Mbit/s)   Flow 1 egress (mean 251.15 Mbit/s)

• Flow 1 (95th percentile 50.43 ms)

```
Run 1: Statistics of TCP Vegas

Start at: 2018-09-06 22:07:55
End at: 2018-09-06 22:08:25
Local clock offset: 0.089 ms
Remote clock offset: 0.079 ms


# Below is generated by plot.py at 2018-09-07 01:46:10
# Datalink statistics
-- Total of 1 flow:
Average throughput: 554.17 Mbit/s
95th percentile per-packet one-way delay: 50.770 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 554.17 Mbit/s
95th percentile per-packet one-way delay: 50.770 ms
Loss rate: 0.00%
```
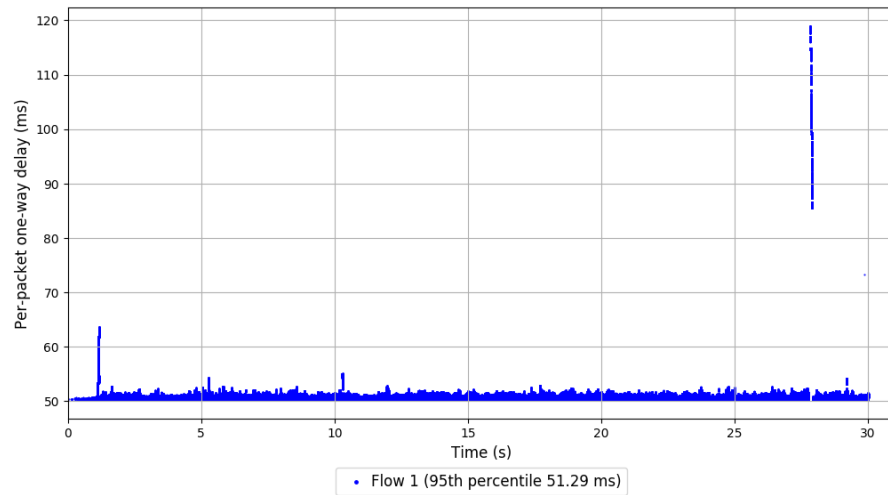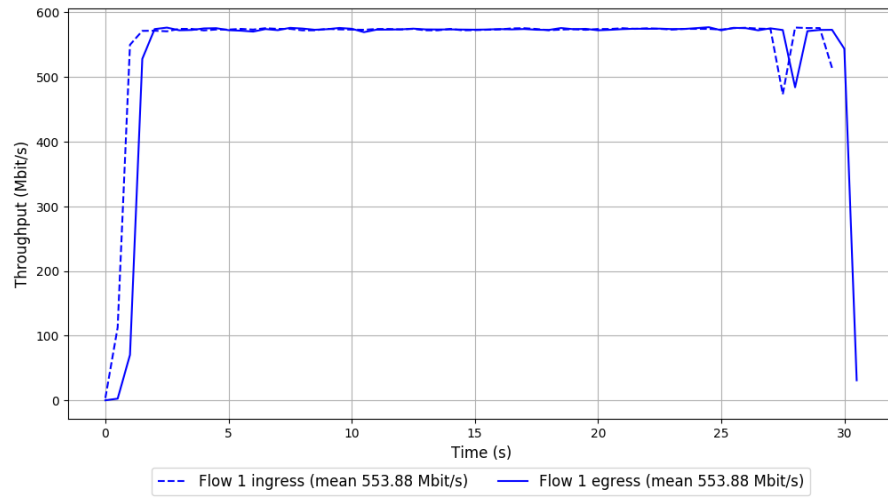
Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-09-06 22:33:43
End at: 2018-09-06 22:34:13
Local clock offset: -0.089 ms
Remote clock offset: -0.087 ms


# Below is generated by plot.py at 2018-09-07 01:48:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 553.88 Mbit/s
95th percentile per-packet one-way delay: 51.289 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 553.88 Mbit/s
95th percentile per-packet one-way delay: 51.289 ms
Loss rate: 0.00%
```
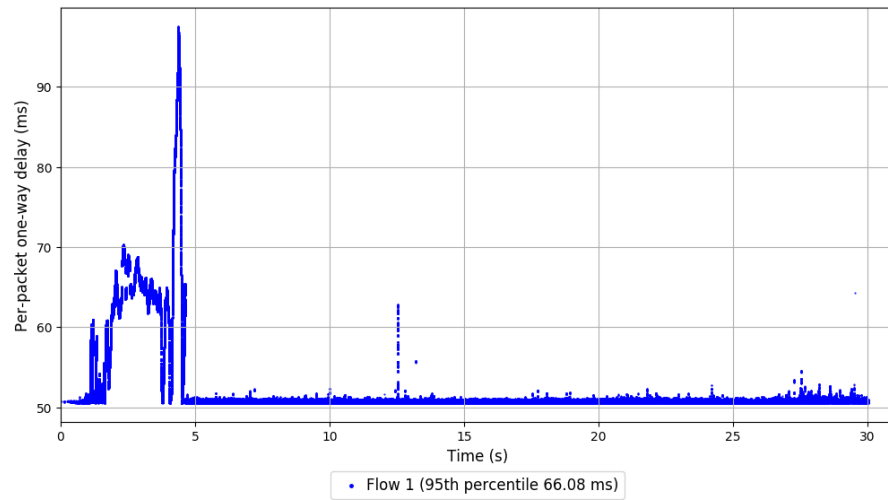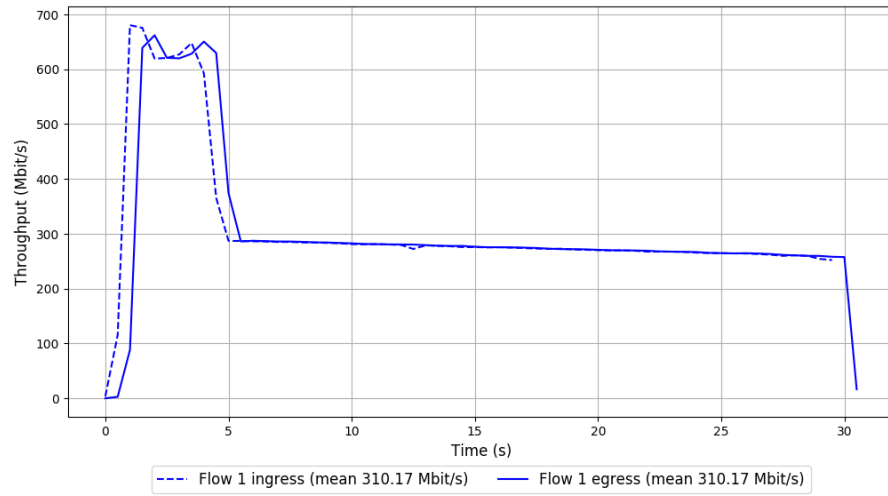
Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-09-06 22:59:34
End at: 2018-09-06 23:00:04
Local clock offset: -0.119 ms
Remote clock offset: -0.089 ms


# Below is generated by plot.py at 2018-09-07 01:48:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 310.17 Mbit/s
95th percentile per-packet one-way delay: 66.081 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 310.17 Mbit/s
95th percentile per-packet one-way delay: 66.081 ms
Loss rate: 0.00%
```

Run 3: Report of TCP Vegas — Data Link

```
Run 4: Statistics of TCP Vegas

Start at: 2018-09-06 23:25:07
End at: 2018-09-06 23:25:37
Local clock offset: 0.091 ms
Remote clock offset: 0.009 ms


# Below is generated by plot.py at 2018-09-07 01:51:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 557.25 Mbit/s
95th percentile per-packet one-way delay: 55.348 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 557.25 Mbit/s
95th percentile per-packet one-way delay: 55.348 ms
Loss rate: 0.00%
```
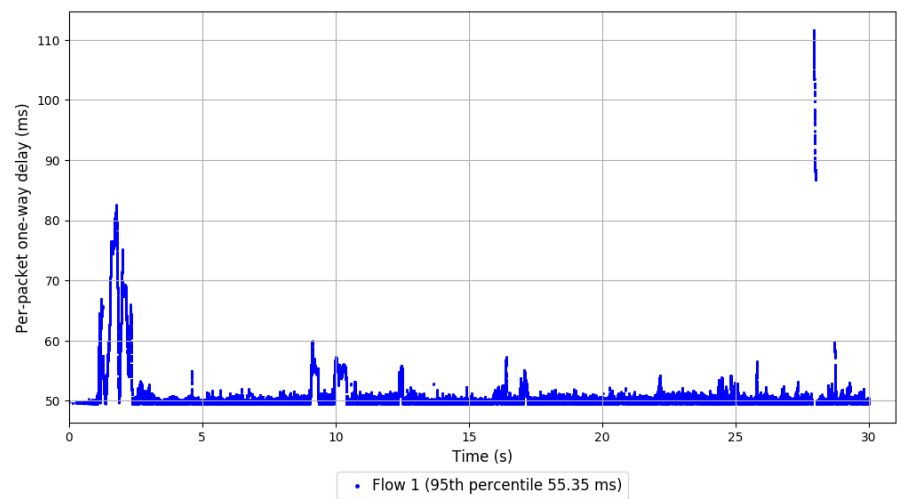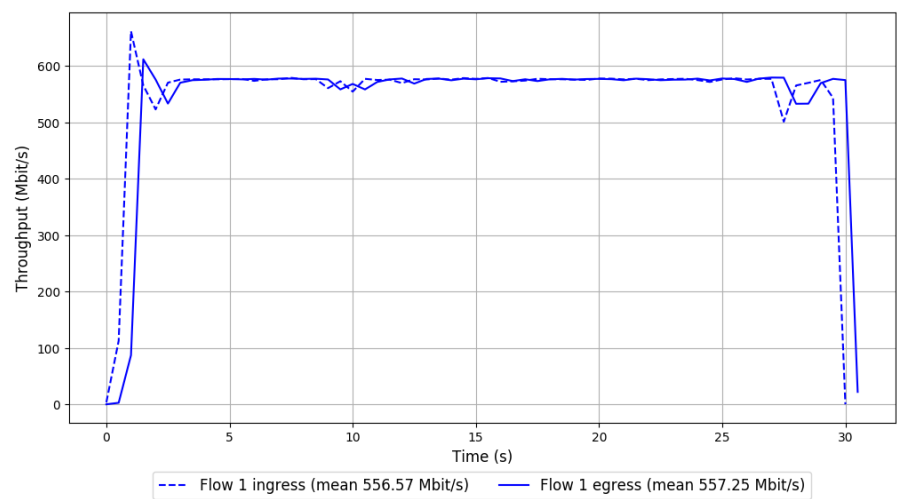
Run 4: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 556.57 Mbit/s) —— Flow 1 egress (mean 557.25 Mbit/s)

• Flow 1 (95th percentile 55.35 ms)

```
Run 5: Statistics of TCP Vegas

Start at: 2018-09-06 23:51:06
End at: 2018-09-06 23:51:36
Local clock offset: 0.562 ms
Remote clock offset: 0.02 ms


# Below is generated by plot.py at 2018-09-07 01:51:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 561.08 Mbit/s
95th percentile per-packet one-way delay: 49.463 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 561.08 Mbit/s
95th percentile per-packet one-way delay: 49.463 ms
Loss rate: 0.00%
```
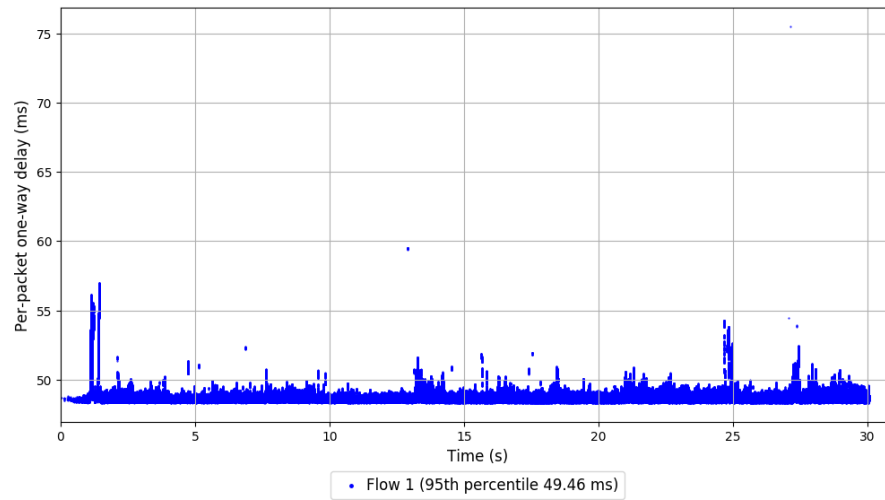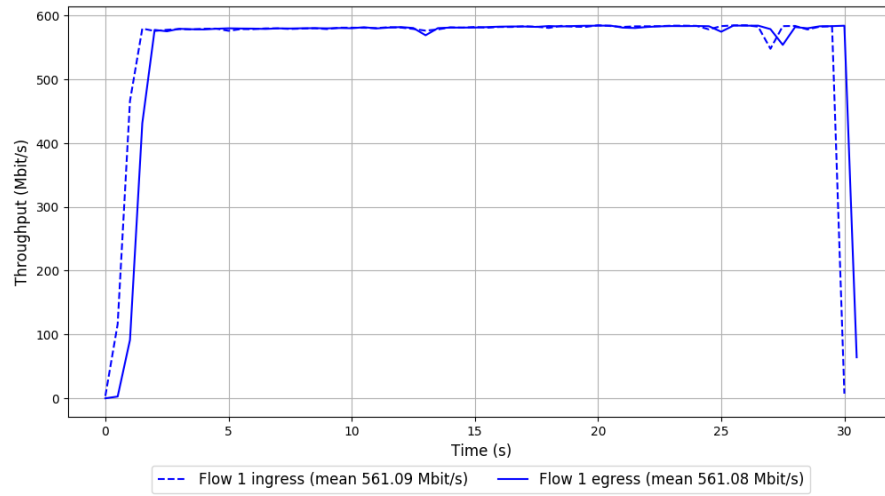
Run 5: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 561.09 Mbit/s) — Flow 1 egress (mean 561.08 Mbit/s)

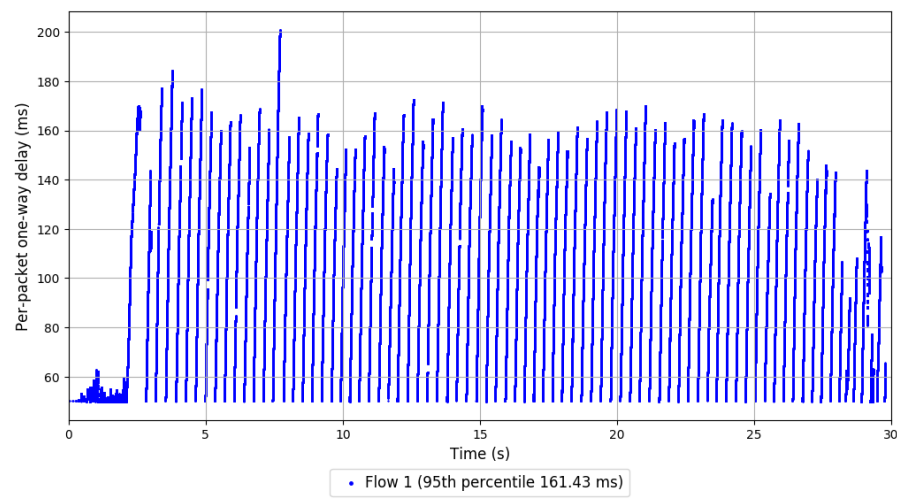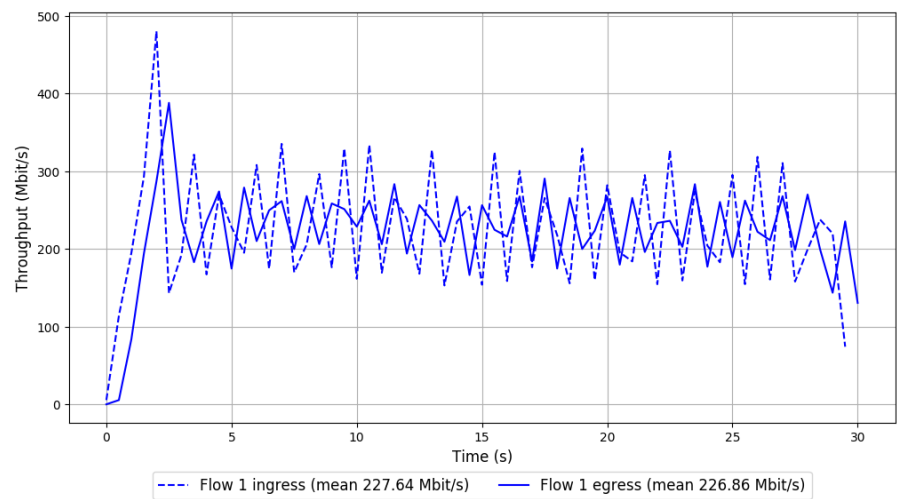

• Flow 1 (95th percentile 49.46 ms)

```
Run 1: Statistics of Verus

Start at: 2018-09-06 22:17:56
End at: 2018-09-06 22:18:26
Local clock offset: 0.359 ms
Remote clock offset: -0.016 ms


# Below is generated by plot.py at 2018-09-07 01:51:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 226.86 Mbit/s
95th percentile per-packet one-way delay: 161.425 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 226.86 Mbit/s
95th percentile per-packet one-way delay: 161.425 ms
Loss rate: 0.34%
```
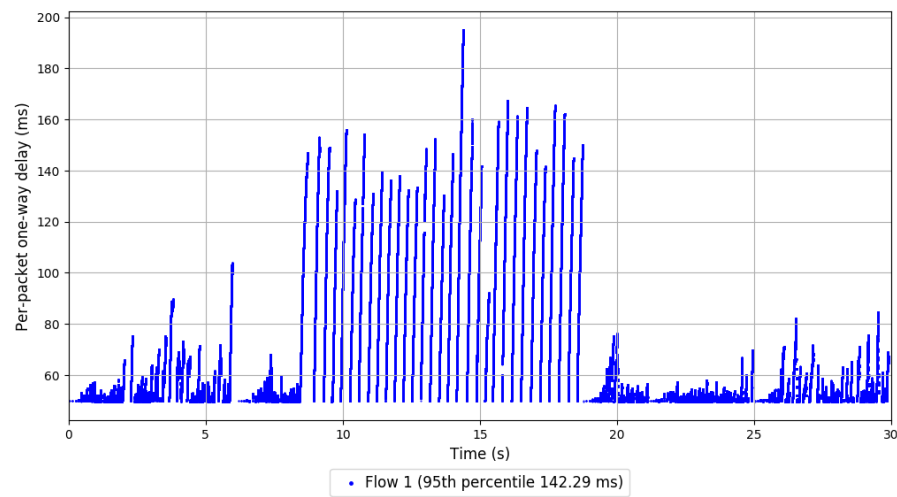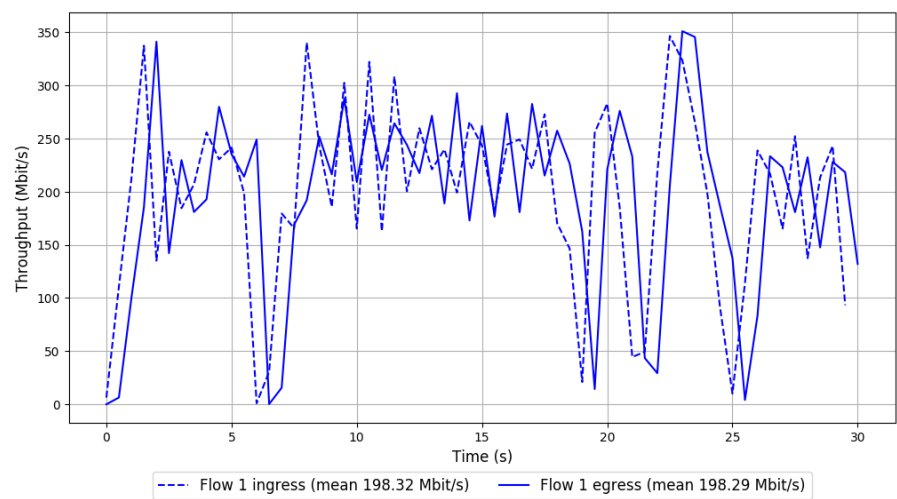
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-09-06 22:43:48
End at: 2018-09-06 22:44:18
Local clock offset: -0.058 ms
Remote clock offset: -0.139 ms


# Below is generated by plot.py at 2018-09-07 01:51:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 198.29 Mbit/s
95th percentile per-packet one-way delay: 142.293 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 198.29 Mbit/s
95th percentile per-packet one-way delay: 142.293 ms
Loss rate: 0.02%
```
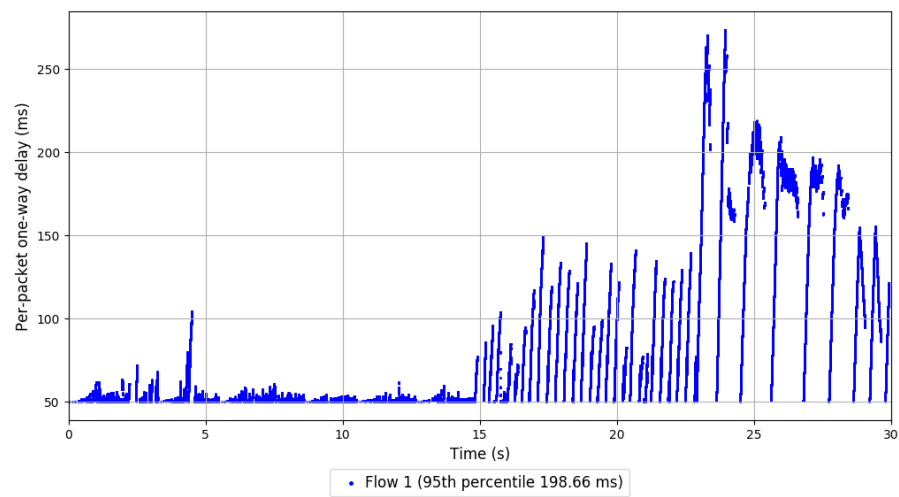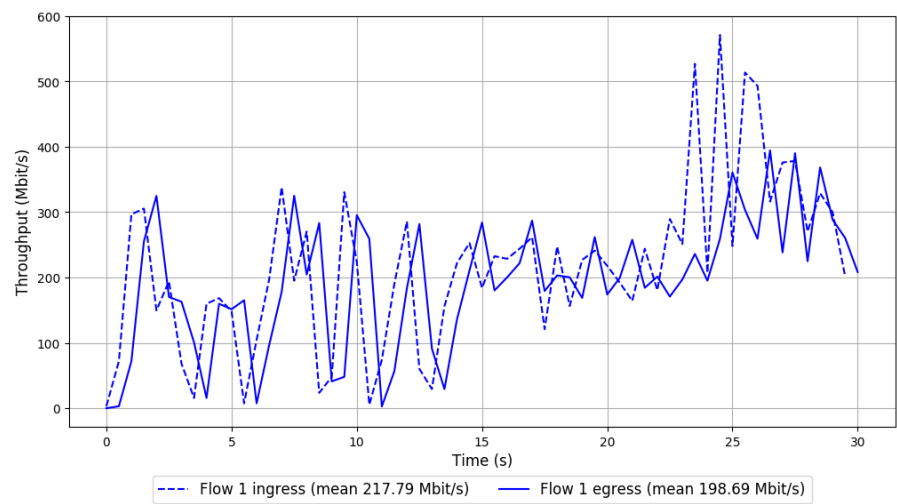
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-09-06 23:09:25
End at: 2018-09-06 23:09:55
Local clock offset: -0.172 ms
Remote clock offset: -0.106 ms


# Below is generated by plot.py at 2018-09-07 01:51:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 198.69 Mbit/s
95th percentile per-packet one-way delay: 198.665 ms
Loss rate: 8.76%
-- Flow 1:
Average throughput: 198.69 Mbit/s
95th percentile per-packet one-way delay: 198.665 ms
Loss rate: 8.76%
```

Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2018-09-06 23:35:14
End at: 2018-09-06 23:35:44
Local clock offset: 0.188 ms
Remote clock offset: 0.005 ms


# Below is generated by plot.py at 2018-09-07 01:51:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 177.30 Mbit/s
95th percentile per-packet one-way delay: 122.800 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 177.30 Mbit/s
95th percentile per-packet one-way delay: 122.800 ms
Loss rate: 0.00%
```
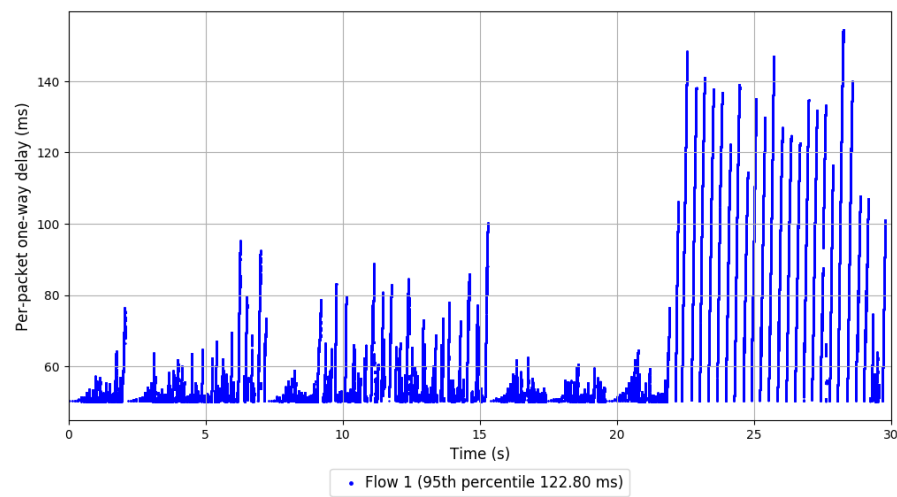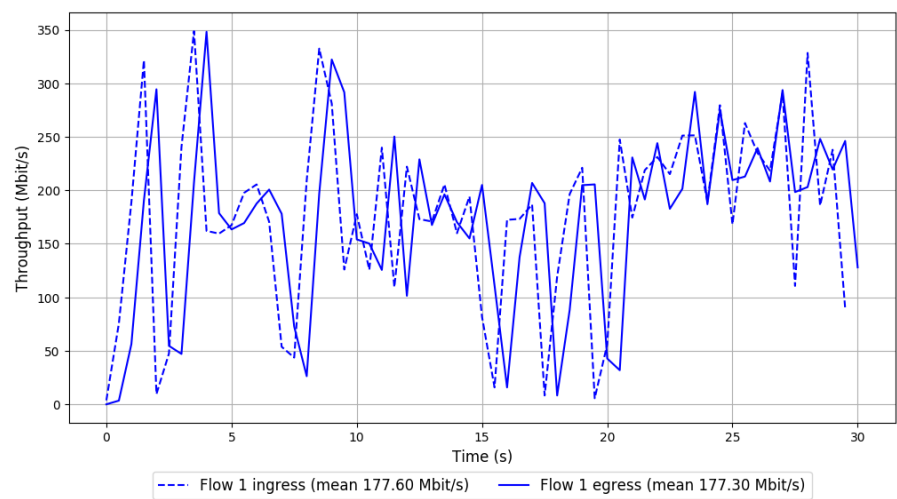
Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2018-09-07 00:01:12
End at: 2018-09-07 00:01:42
Local clock offset: 0.122 ms
Remote clock offset: 0.024 ms


# Below is generated by plot.py at 2018-09-07 01:52:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 168.67 Mbit/s
95th percentile per-packet one-way delay: 70.800 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 168.67 Mbit/s
95th percentile per-packet one-way delay: 70.800 ms
Loss rate: 0.00%
```
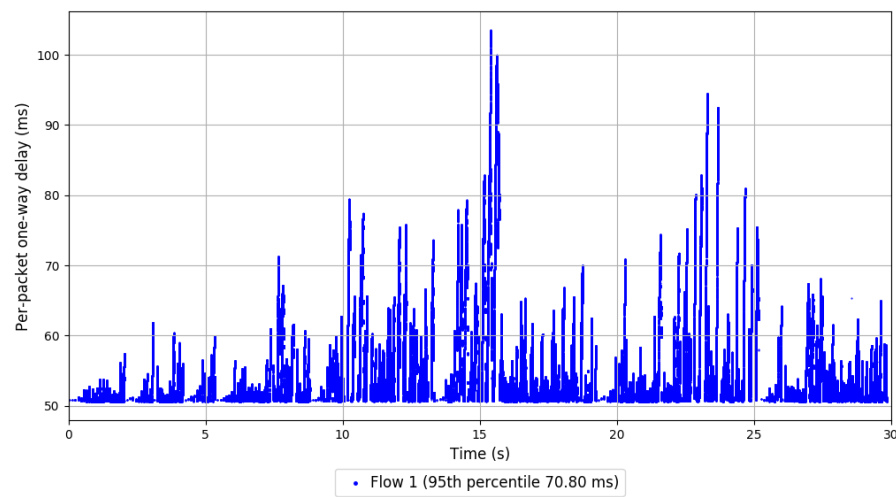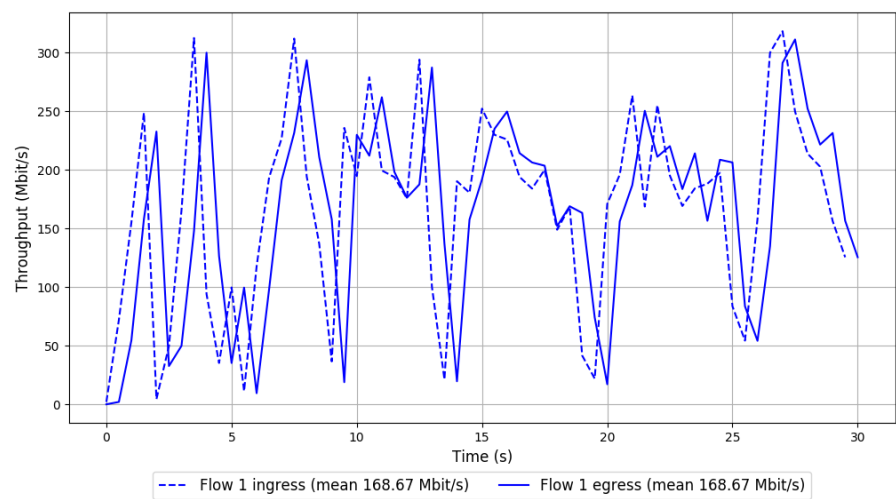
Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-09-06 22:11:06
End at: 2018-09-06 22:11:36
Local clock offset: 0.045 ms
Remote clock offset: 0.024 ms


# Below is generated by plot.py at 2018-09-07 01:54:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 405.80 Mbit/s
95th percentile per-packet one-way delay: 51.354 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 405.80 Mbit/s
95th percentile per-packet one-way delay: 51.354 ms
Loss rate: 0.00%
```
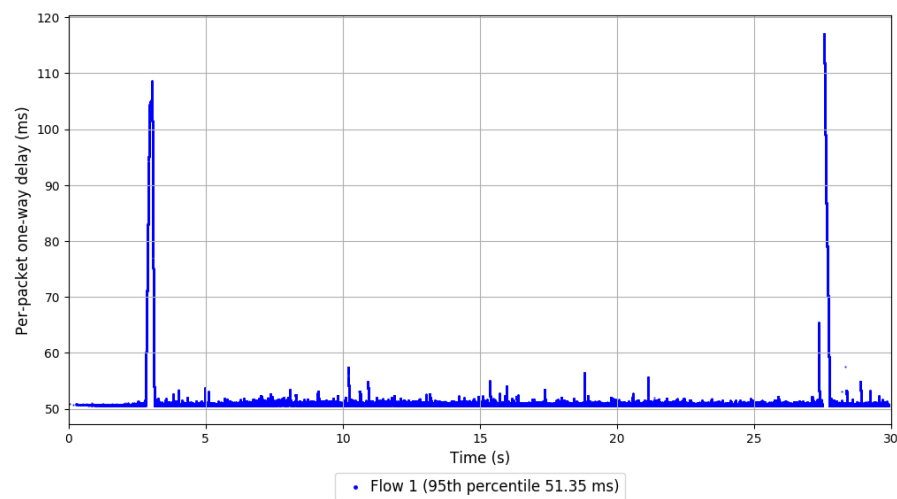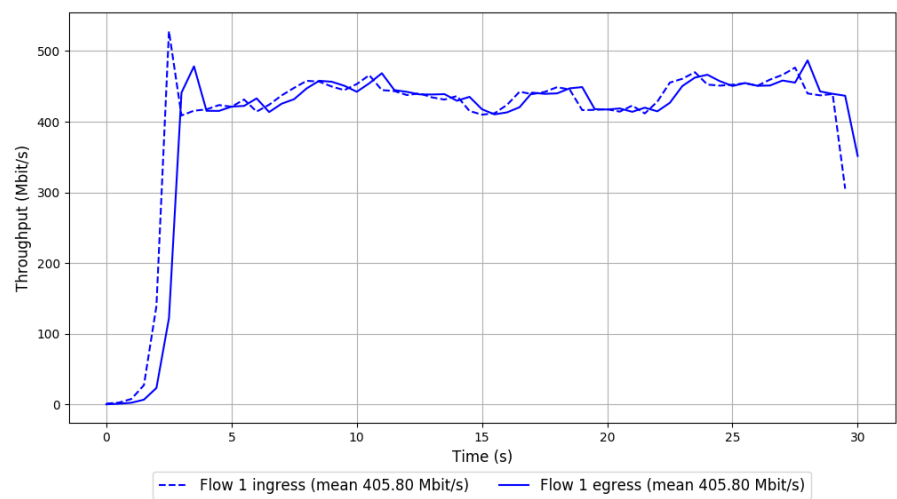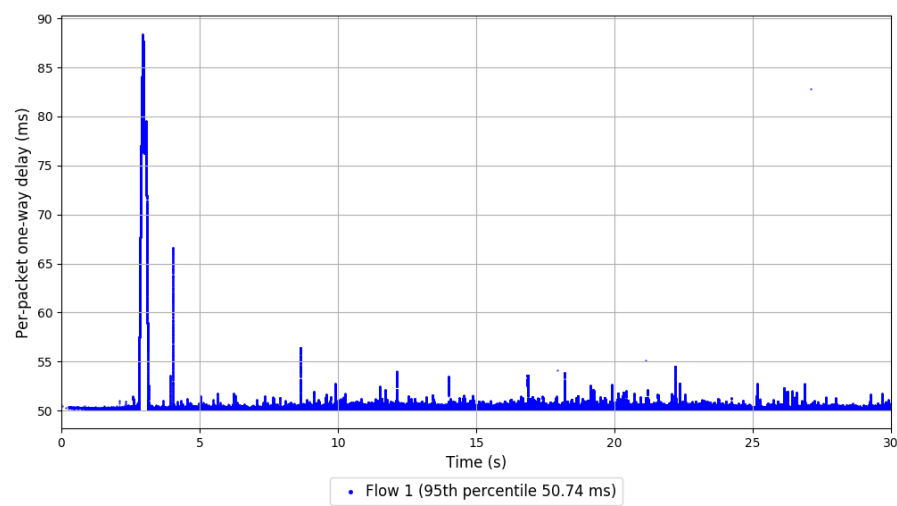
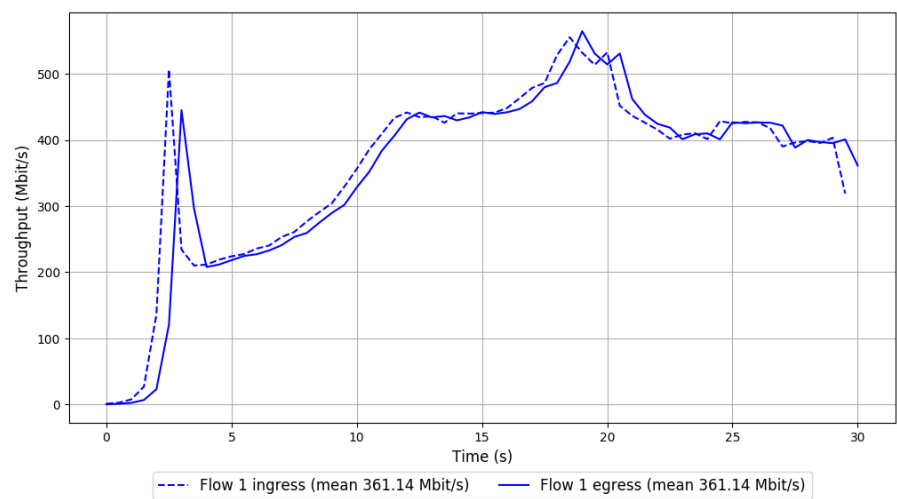Run 1: Report of PCC-Vivace — Data Link

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-09-06 22:36:58
End at: 2018-09-06 22:37:28
Local clock offset: -0.065 ms
Remote clock offset: -0.108 ms


# Below is generated by plot.py at 2018-09-07 01:54:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 361.14 Mbit/s
95th percentile per-packet one-way delay: 50.745 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 361.14 Mbit/s
95th percentile per-packet one-way delay: 50.745 ms
Loss rate: 0.00%
```

Run 2: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 361.14 Mbit/s)   Flow 1 egress (mean 361.14 Mbit/s)
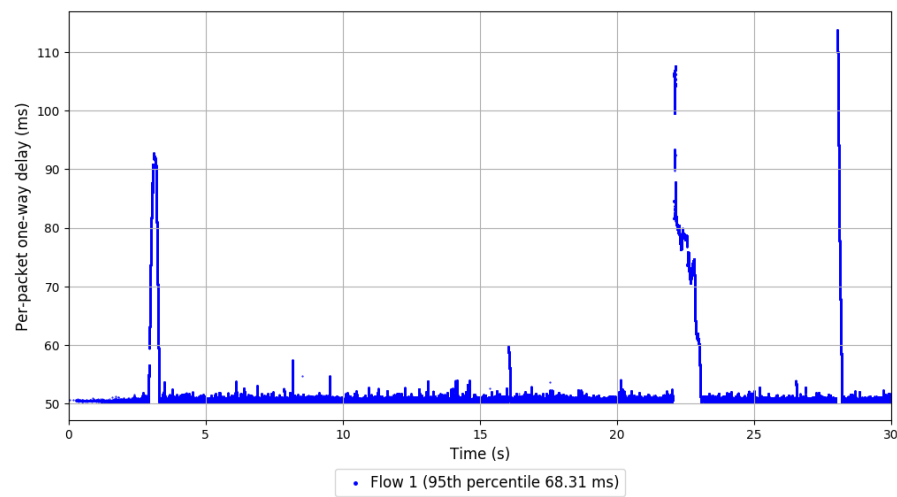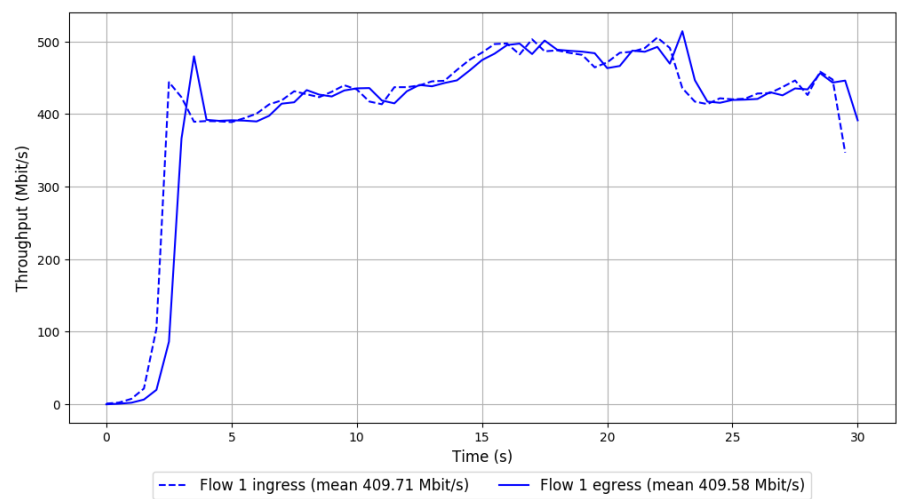

Flow 1 (95th percentile 50.74 ms)

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-09-06 23:02:31
End at: 2018-09-06 23:03:01
Local clock offset: -0.13 ms
Remote clock offset: -0.077 ms


# Below is generated by plot.py at 2018-09-07 01:54:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 409.58 Mbit/s
95th percentile per-packet one-way delay: 68.312 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 409.58 Mbit/s
95th percentile per-packet one-way delay: 68.312 ms
Loss rate: 0.03%
```
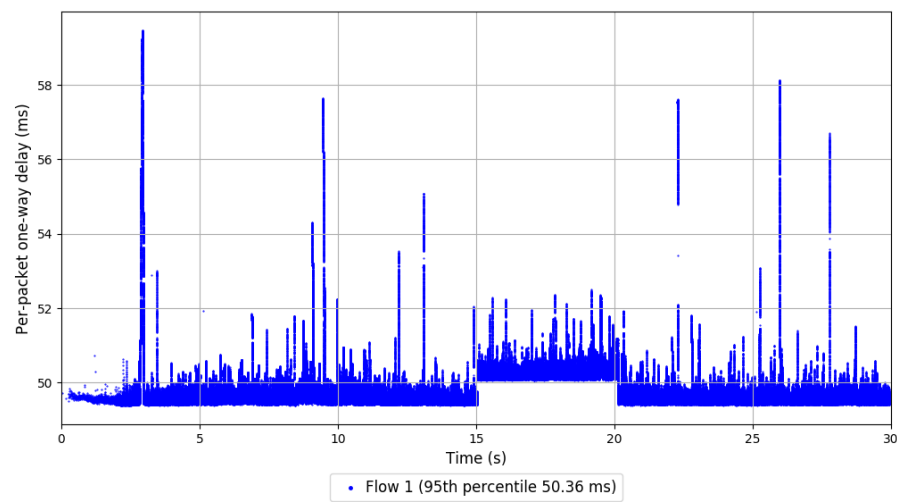
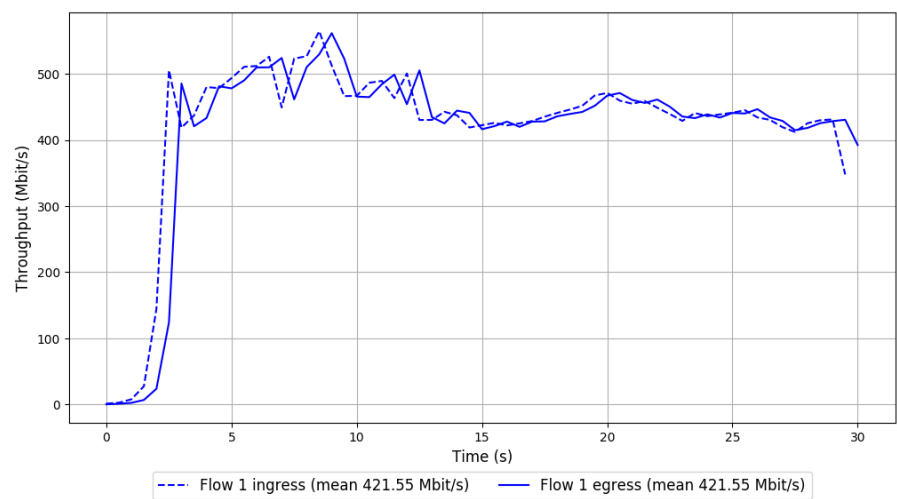## Run 3: Report of PCC-Vivace — Data Link

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-09-06 23:28:17
End at: 2018-09-06 23:28:47
Local clock offset: 0.177 ms
Remote clock offset: -0.003 ms


# Below is generated by plot.py at 2018-09-07 01:54:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 421.55 Mbit/s
95th percentile per-packet one-way delay: 50.363 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 421.55 Mbit/s
95th percentile per-packet one-way delay: 50.363 ms
Loss rate: 0.00%
```

Run 4: Report of PCC-Vivace — Data Link

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-09-06 23:54:17
End at: 2018-09-06 23:54:47
Local clock offset: 0.183 ms
Remote clock offset: 0.034 ms


# Below is generated by plot.py at 2018-09-07 01:54:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 383.55 Mbit/s
95th percentile per-packet one-way delay: 49.778 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 383.55 Mbit/s
95th percentile per-packet one-way delay: 49.778 ms
Loss rate: 0.00%
```
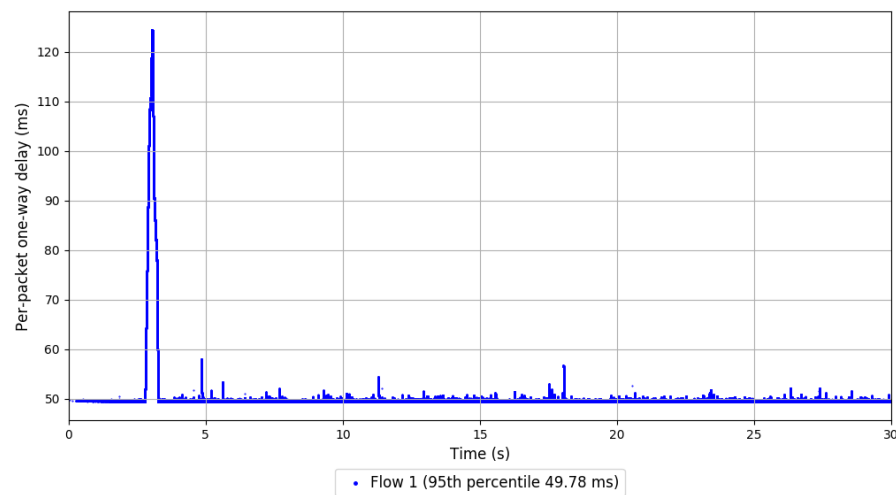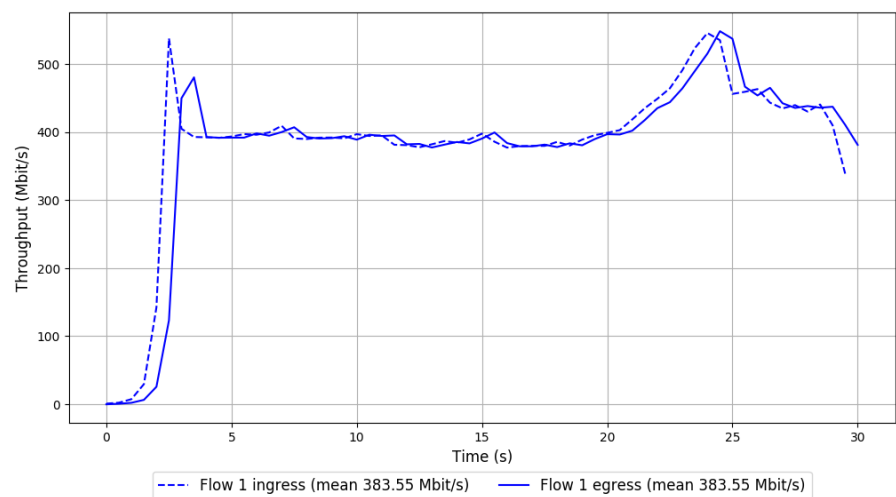
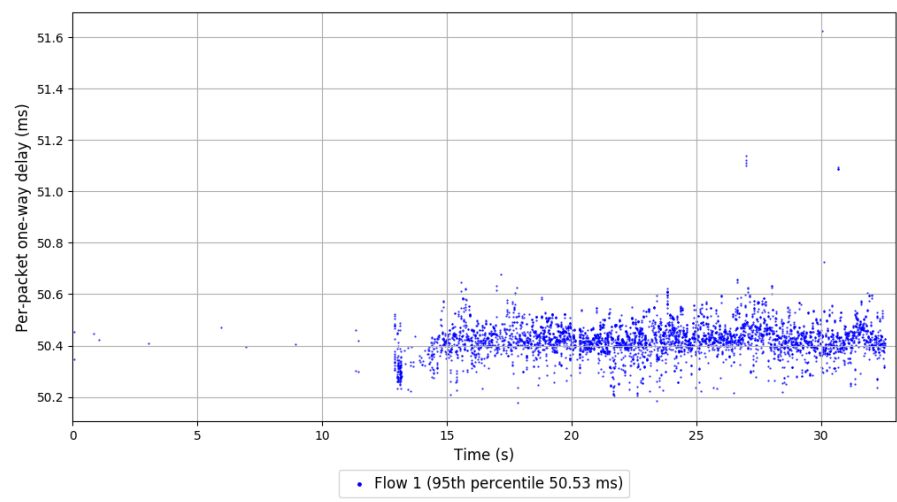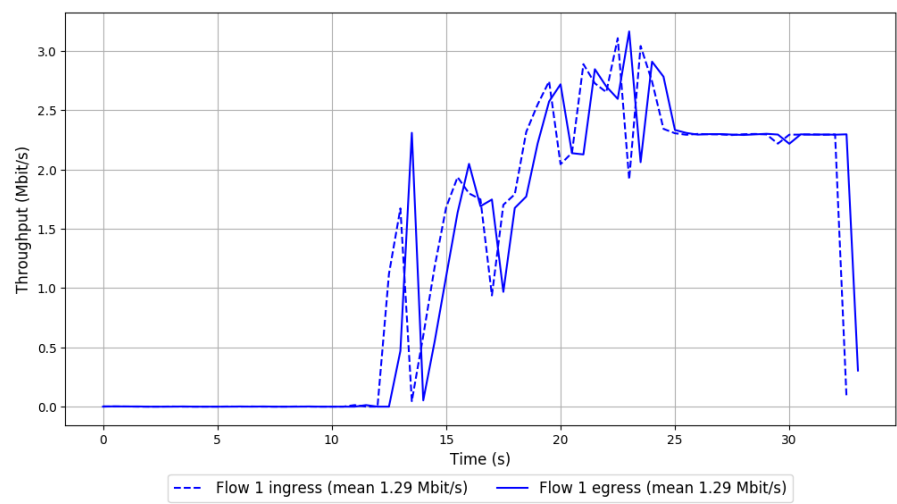Run 5: Report of PCC-Vivace — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2018-09-06 22:15:09
End at: 2018-09-06 22:15:39
Local clock offset: 0.381 ms
Remote clock offset: -0.036 ms


# Below is generated by plot.py at 2018-09-07 01:54:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.29 Mbit/s
95th percentile per-packet one-way delay: 50.529 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.29 Mbit/s
95th percentile per-packet one-way delay: 50.529 ms
Loss rate: 0.00%
```

Run 1: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.29 Mbit/s)   Flow 1 egress (mean 1.29 Mbit/s)
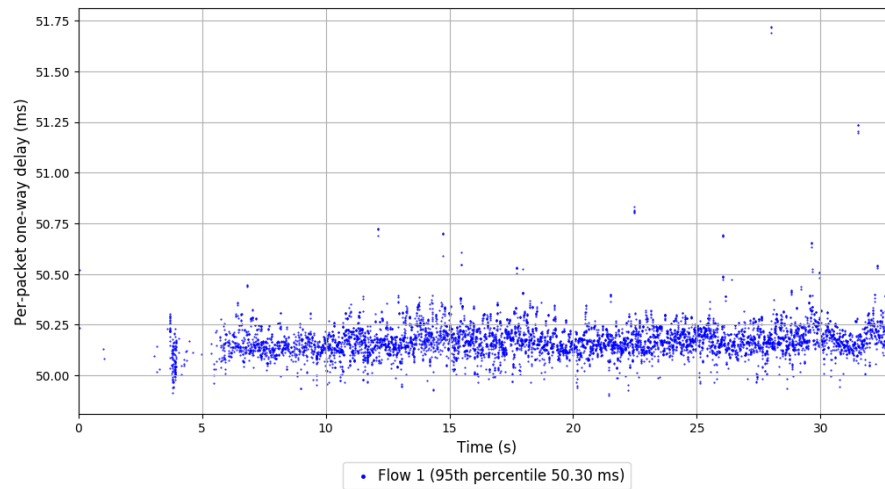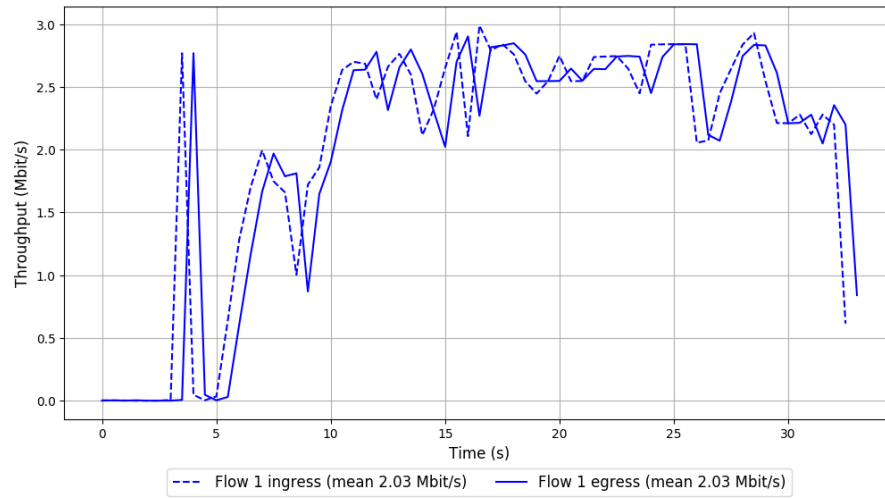

Flow 1 (95th percentile 50.53 ms)

```
Run 2: Statistics of WebRTC media

Start at: 2018-09-06 22:41:04
End at: 2018-09-06 22:41:34
Local clock offset: 0.287 ms
Remote clock offset: -0.088 ms


# Below is generated by plot.py at 2018-09-07 01:54:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.03 Mbit/s
95th percentile per-packet one-way delay: 50.299 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.03 Mbit/s
95th percentile per-packet one-way delay: 50.299 ms
Loss rate: 0.00%
```

Run 2: Report of WebRTC media — Data Link

Flow 1 ingress (mean 2.03 Mbit/s)   Flow 1 egress (mean 2.03 Mbit/s)

Flow 1 (95th percentile 50.30 ms)

```
Run 3: Statistics of WebRTC media

Start at: 2018-09-06 23:06:41
End at: 2018-09-06 23:07:11
Local clock offset: -0.096 ms
Remote clock offset: -0.06 ms


# Below is generated by plot.py at 2018-09-07 01:54:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.07 Mbit/s
95th percentile per-packet one-way delay: 49.796 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.07 Mbit/s
95th percentile per-packet one-way delay: 49.796 ms
Loss rate: 0.00%
```
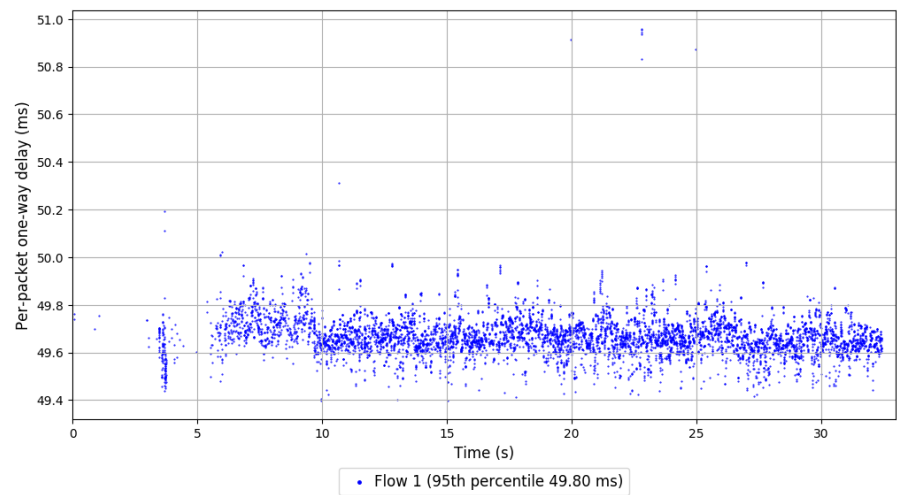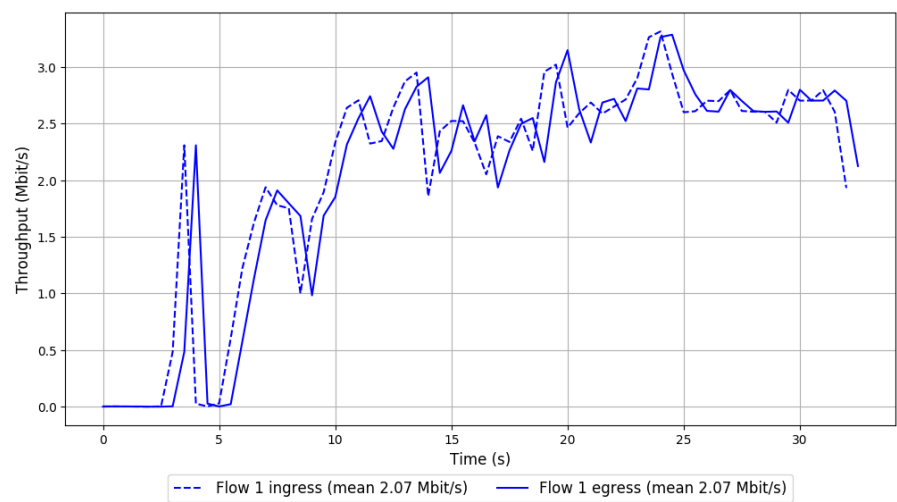
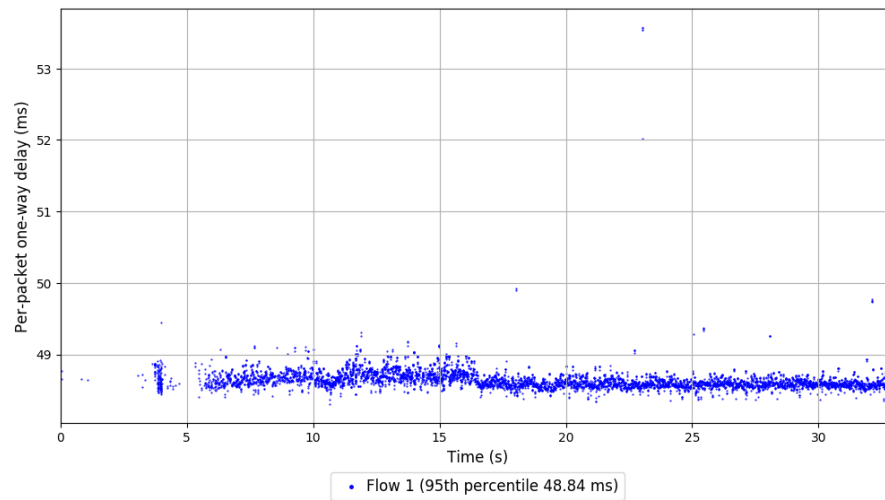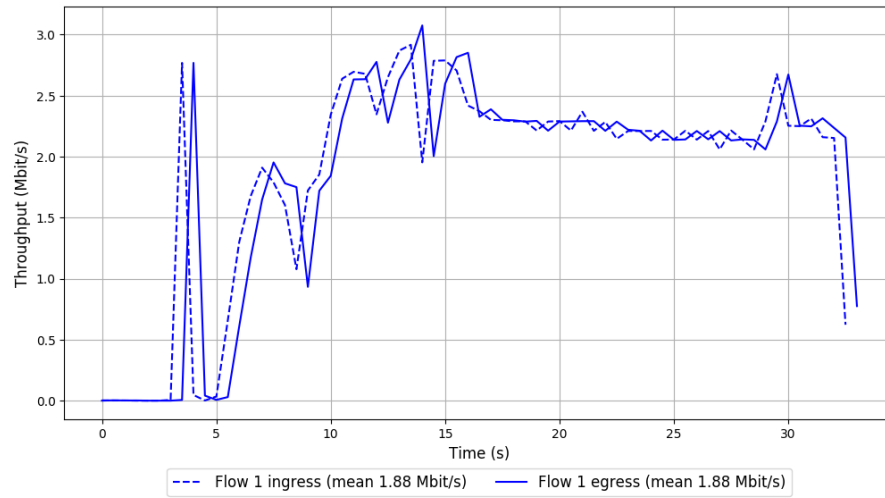Run 3: Report of WebRTC media — Data Link

```
Run 4: Statistics of WebRTC media

Start at: 2018-09-06 23:32:28
End at: 2018-09-06 23:32:58
Local clock offset: 0.559 ms
Remote clock offset: -0.006 ms


# Below is generated by plot.py at 2018-09-07 01:54:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 48.842 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 48.842 ms
Loss rate: 0.00%
```

Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2018-09-06 23:58:23
End at: 2018-09-06 23:58:53
Local clock offset: 0.172 ms
Remote clock offset: 0.005 ms


# Below is generated by plot.py at 2018-09-07 01:54:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.00 Mbit/s
95th percentile per-packet one-way delay: 50.989 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.00 Mbit/s
95th percentile per-packet one-way delay: 50.989 ms
Loss rate: 0.00%
```

Run 5: Report of WebRTC media — Data Link