# Pantheon Report

Generated at 2018-10-26 02:23:47 (UTC).

Data path: AWS California 1 on **ens5** (*local*) →Stanford on **eno1** (*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.stanford.edu` and have been applied to correct the timestamps in logs.
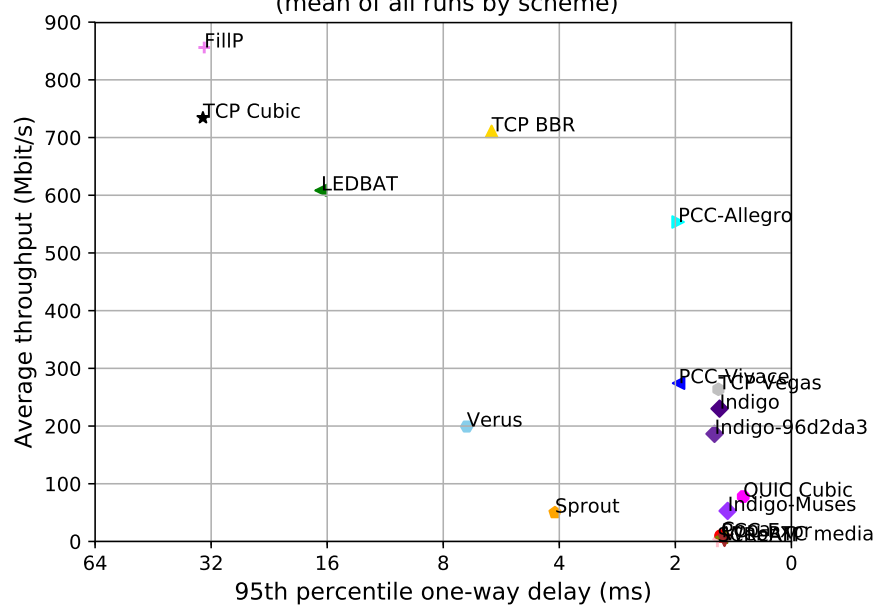
```
System info:
Linux 4.15.0-1023-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:
branch: muses @ 2e19c0464530faa92c63f8217c9971438a26a3be
third_party/fillp @ 5332fc9127c63565e13f4933b336c02d1aabdac6
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
 M src/ScreamClient
 M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
 M src/examples/cellsim.cc
 M src/examples/sproutbt2.cc
 M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
 M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
```
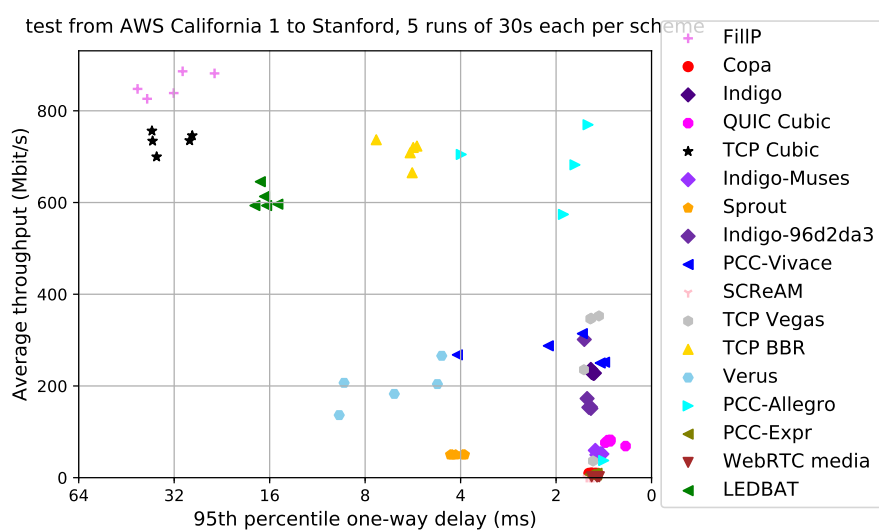
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851

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



test from AWS California 1 to Stanford, 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 | 710.71 | 5.99 | 0.02 |
| Copa | 5 | 9.53 | 1.21 | 49.74 |
| TCP Cubic | 5 | 734.19 | 33.61 | 0.09 |
| FillP | 5 | 856.04 | 33.35 | 4.43 |
| Indigo | 5 | 230.15 | 1.24 | 0.00 |
| Indigo-96d2da3 | 5 | 186.50 | 1.33 | 0.00 |
| LEDBAT | 5 | 608.35 | 16.60 | 0.05 |
| Indigo-Muses | 5 | 52.92 | 1.10 | 0.01 |
| PCC-Allegro | 5 | 553.63 | 1.95 | 10.27 |
| PCC-Expr | 5 | 7.25 | 1.20 | 16.76 |
| QUIC Cubic | 5 | 77.76 | 0.83 | 0.00 |
| SCReAM | 5 | 0.22 | 1.28 | 0.00 |
| Sprout | 5 | 50.04 | 4.11 | 0.01 |
| TaoVA-100x | 0 | N/A | N/A | N/A |
| TCP Vegas | 5 | 263.67 | 1.26 | 0.00 |
| Verus | 5 | 199.16 | 6.95 | 0.82 |
| PCC-Vivace | 5 | 274.28 | 1.94 | 0.00 |
| WebRTC media | 5 | 1.94 | 1.15 | 0.00 |

```
Run 1: Statistics of TCP BBR

Start at: 2018-10-25 23:32:54
End at: 2018-10-25 23:33:24
Local clock offset: 0.095 ms
Remote clock offset: -0.058 ms

# Below is generated by plot.py at 2018-10-26 01:55:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 736.93 Mbit/s
95th percentile per-packet one-way delay: 7.378 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 736.93 Mbit/s
95th percentile per-packet one-way delay: 7.378 ms
Loss rate: 0.03%
```
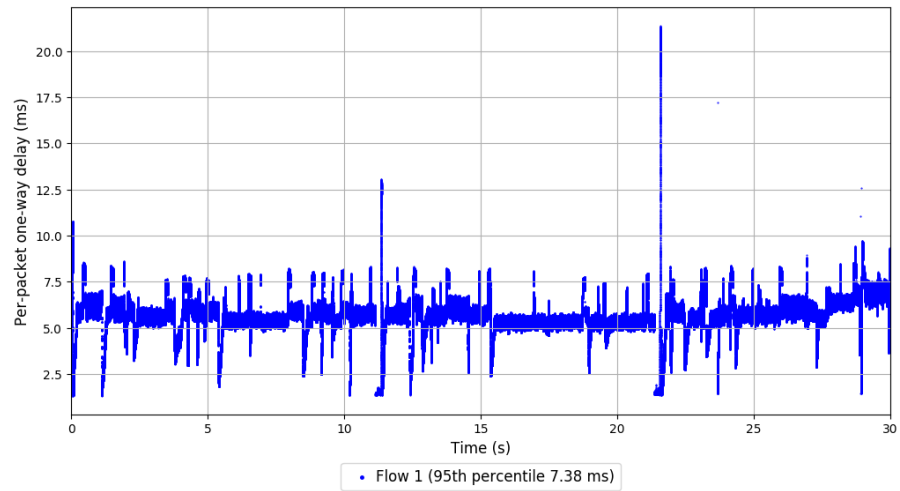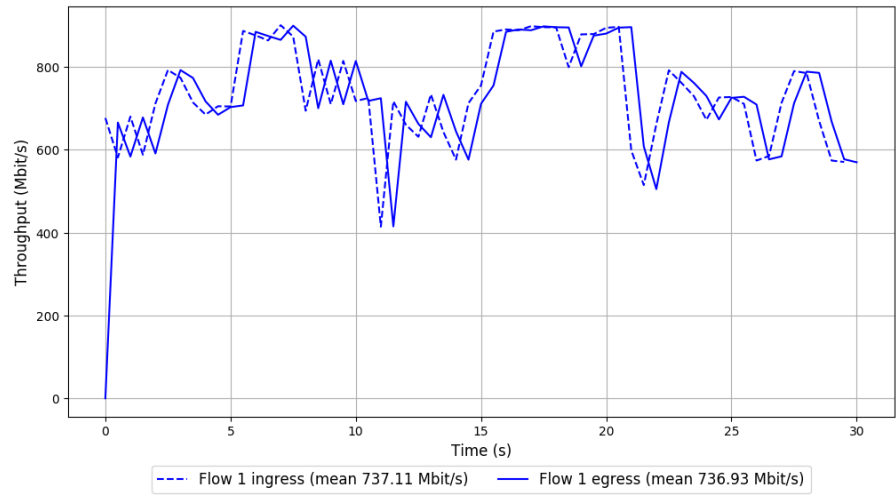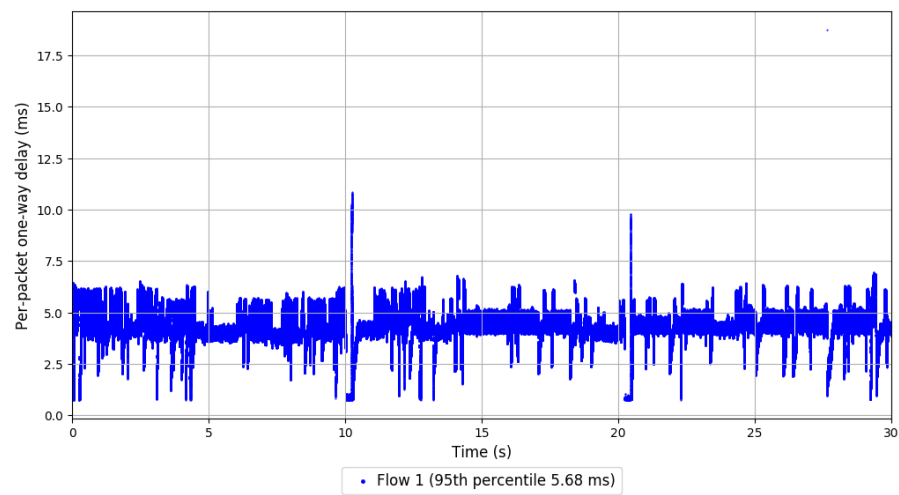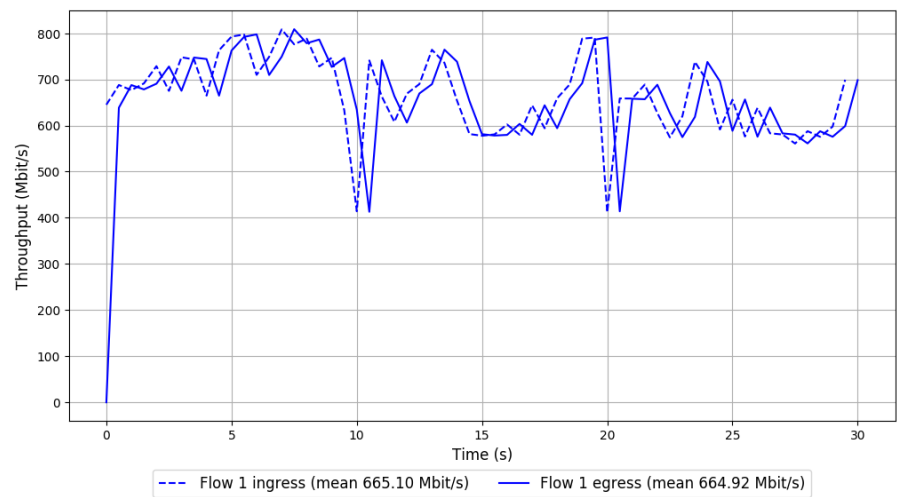
Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-10-25 23:58:55
End at: 2018-10-25 23:59:25
Local clock offset: 0.188 ms
Remote clock offset: 0.221 ms


# Below is generated by plot.py at 2018-10-26 01:55:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 664.92 Mbit/s
95th percentile per-packet one-way delay: 5.684 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 664.92 Mbit/s
95th percentile per-packet one-way delay: 5.684 ms
Loss rate: 0.03%
```
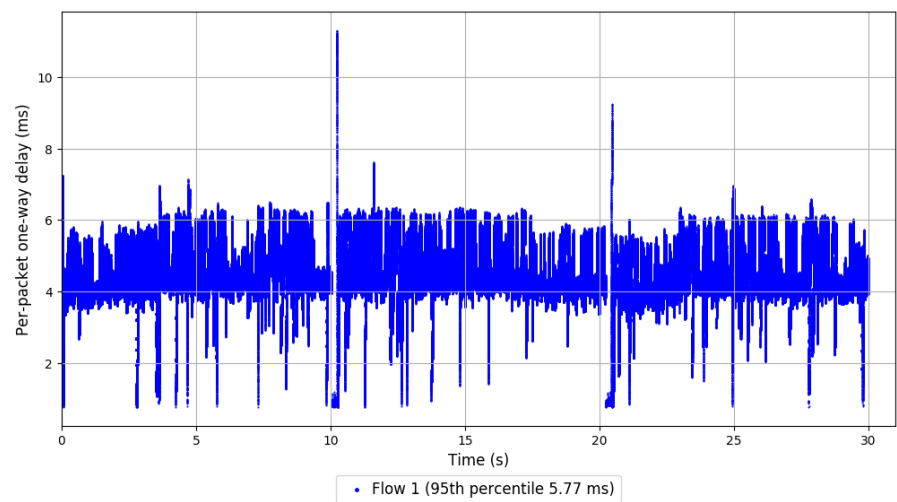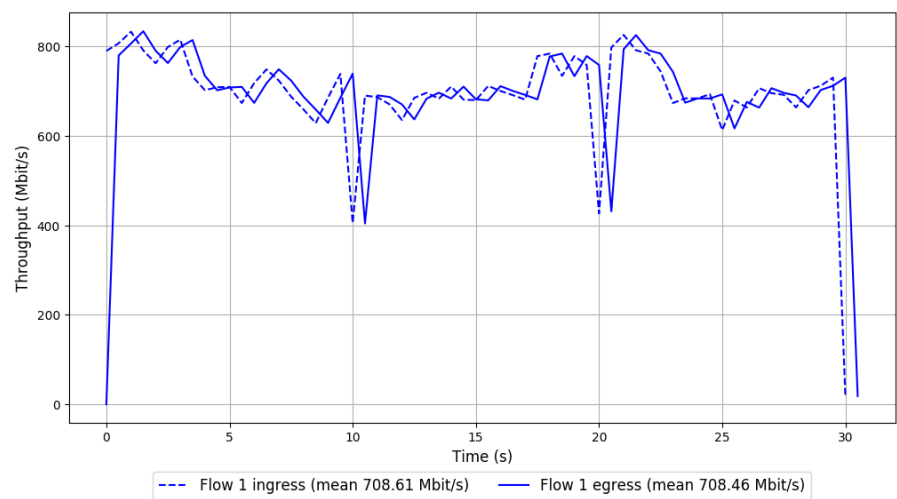
Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2018-10-26 00:24:47
End at: 2018-10-26 00:25:17
Local clock offset: 0.341 ms
Remote clock offset: 0.359 ms


# Below is generated by plot.py at 2018-10-26 01:55:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 708.46 Mbit/s
95th percentile per-packet one-way delay: 5.768 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 708.46 Mbit/s
95th percentile per-packet one-way delay: 5.768 ms
Loss rate: 0.02%
```
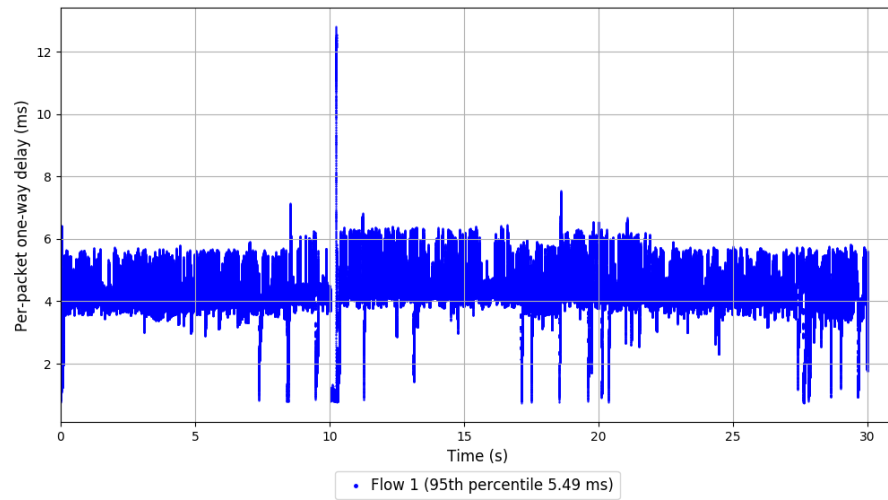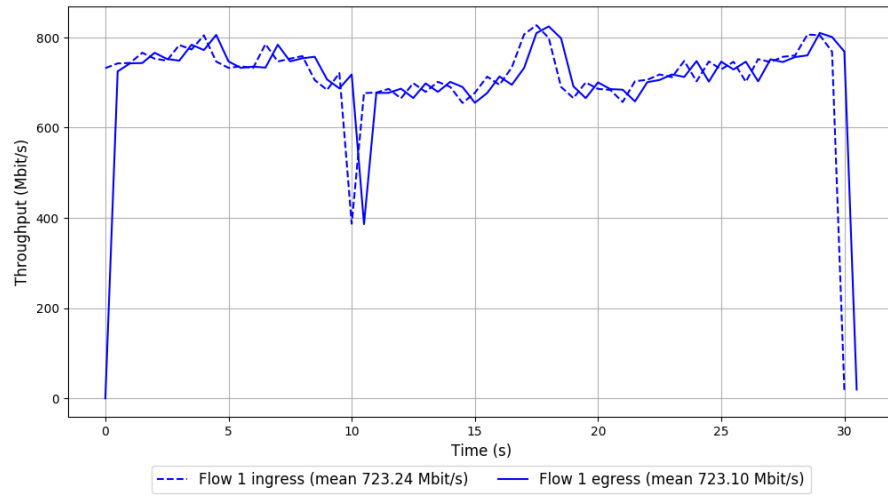
## Run 3: Report of TCP BBR — Data Link



Flow 1 ingress (mean 708.61 Mbit/s) --- Flow 1 egress (mean 708.46 Mbit/s)



Flow 1 (95th percentile 5.77 ms)

```
Run 4: Statistics of TCP BBR

Start at: 2018-10-26 00:50:55
End at: 2018-10-26 00:51:25
Local clock offset: 0.267 ms
Remote clock offset: 3.915 ms

# Below is generated by plot.py at 2018-10-26 01:55:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 723.10 Mbit/s
95th percentile per-packet one-way delay: 5.494 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 723.10 Mbit/s
95th percentile per-packet one-way delay: 5.494 ms
Loss rate: 0.02%
```
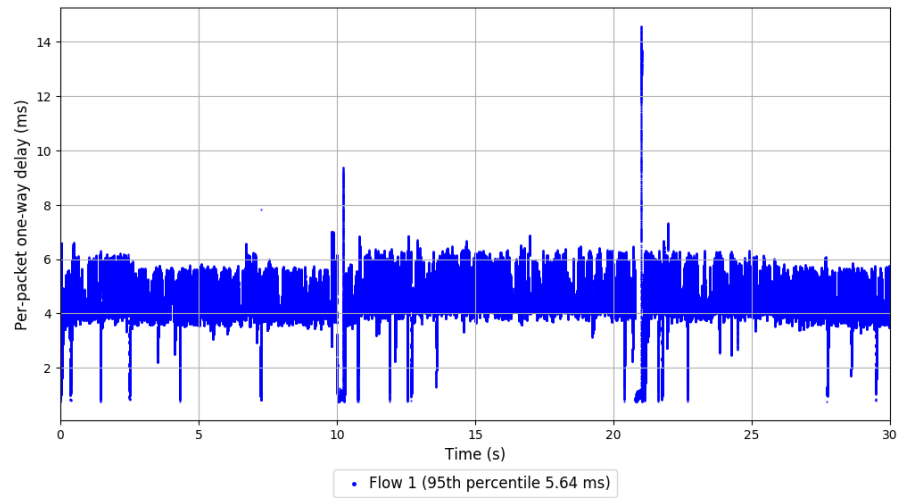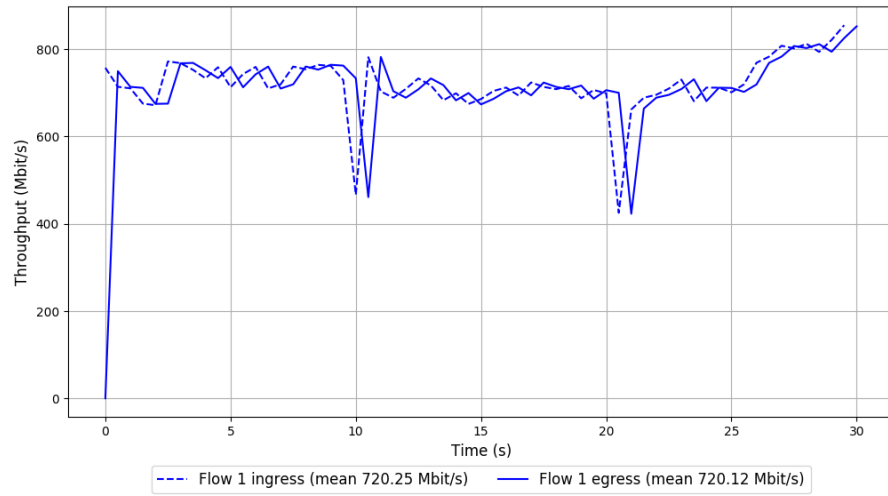
Run 4: Report of TCP BBR — Data Link



Flow 1 ingress (mean 723.24 Mbit/s) --- Flow 1 egress (mean 723.10 Mbit/s)



Flow 1 (95th percentile 5.49 ms)

```
Run 5: Statistics of TCP BBR

Start at: 2018-10-26 01:16:51
End at: 2018-10-26 01:17:21
Local clock offset: 0.177 ms
Remote clock offset: 3.693 ms


# Below is generated by plot.py at 2018-10-26 01:55:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 720.12 Mbit/s
95th percentile per-packet one-way delay: 5.641 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 720.12 Mbit/s
95th percentile per-packet one-way delay: 5.641 ms
Loss rate: 0.02%
```
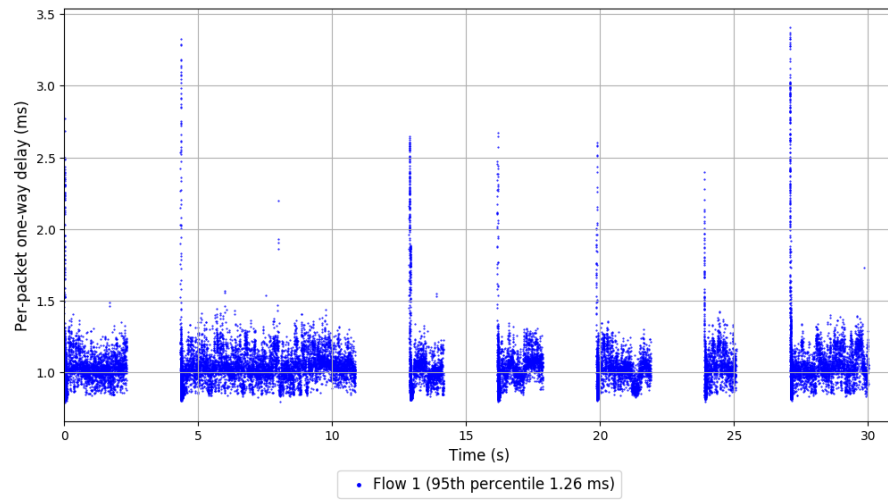
Run 5: Report of TCP BBR — Data Link

```
Run 1: Statistics of Copa

Start at: 2018-10-25 23:44:17
End at: 2018-10-25 23:44:47
Local clock offset: 0.266 ms
Remote clock offset: 0.156 ms

# Below is generated by plot.py at 2018-10-26 01:55:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.26 Mbit/s
95th percentile per-packet one-way delay: 1.258 ms
Loss rate: 54.46%
-- Flow 1:
Average throughput: 10.26 Mbit/s
95th percentile per-packet one-way delay: 1.258 ms
Loss rate: 54.46%
```
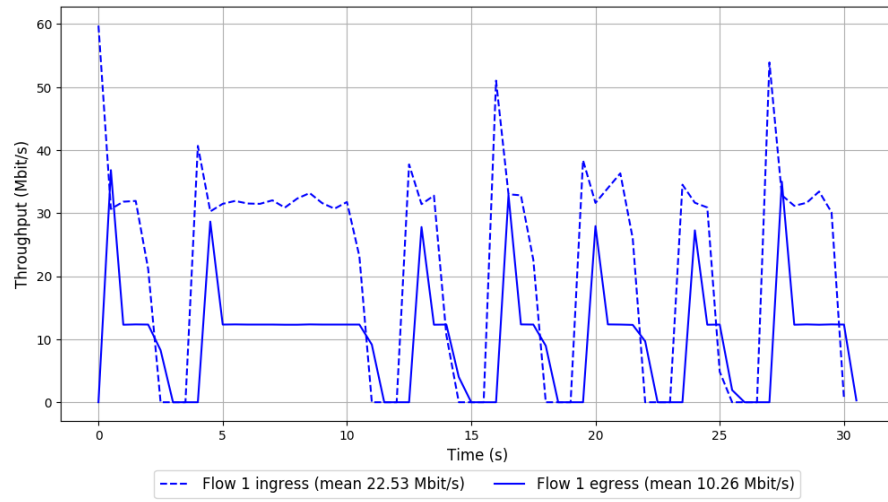
Run 1: Report of Copa — Data Link

```
Run 2: Statistics of Copa

Start at: 2018-10-26 00:10:08
End at: 2018-10-26 00:10:38
Local clock offset: 0.23 ms
Remote clock offset: 0.27 ms

# Below is generated by plot.py at 2018-10-26 01:55:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.44 Mbit/s
95th percentile per-packet one-way delay: 1.313 ms
Loss rate: 49.35%
-- Flow 1:
Average throughput: 9.44 Mbit/s
95th percentile per-packet one-way delay: 1.313 ms
Loss rate: 49.35%
```
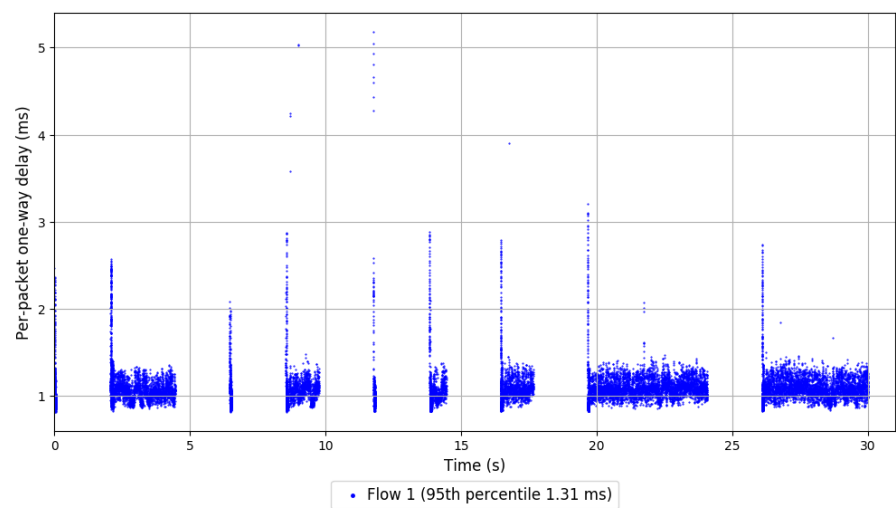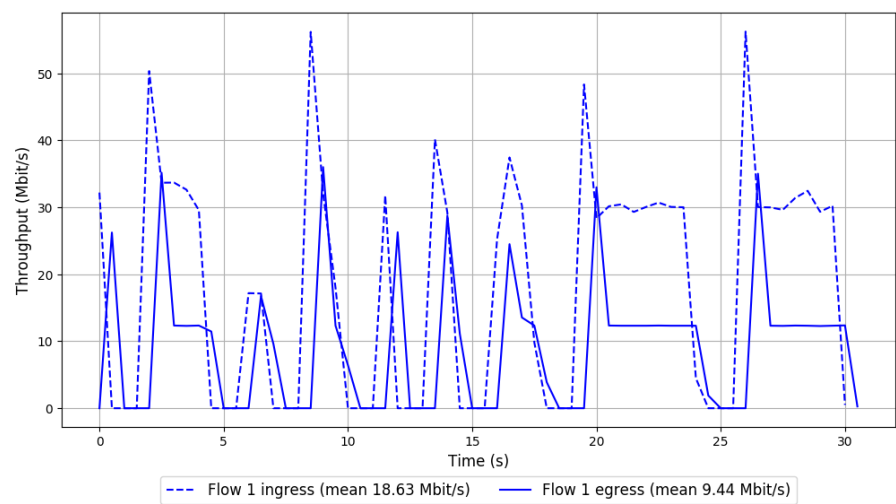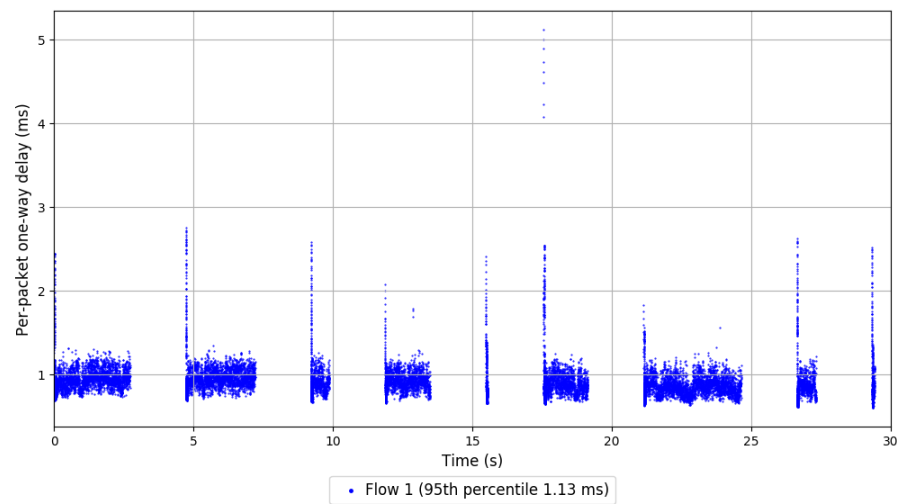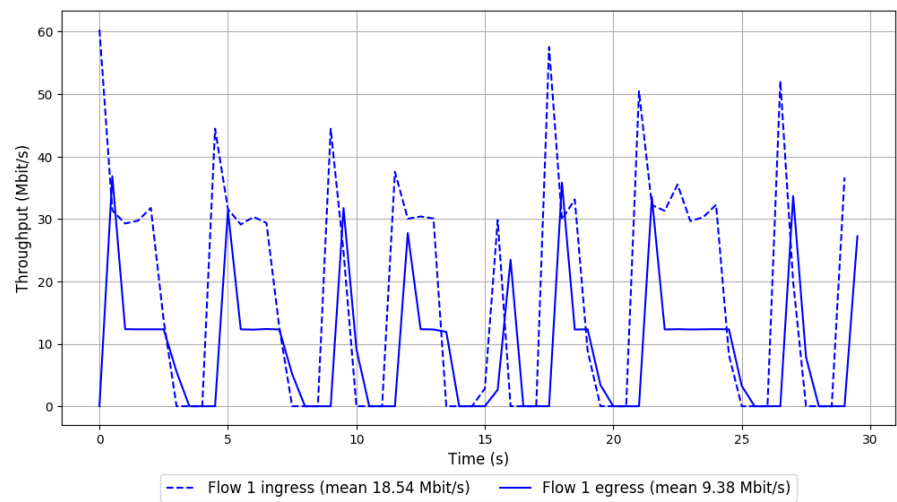
Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2018-10-26 00:36:11
End at: 2018-10-26 00:36:41
Local clock offset: 0.324 ms
Remote clock offset: 2.235 ms


# Below is generated by plot.py at 2018-10-26 01:55:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.38 Mbit/s
95th percentile per-packet one-way delay: 1.129 ms
Loss rate: 49.42%
-- Flow 1:
Average throughput: 9.38 Mbit/s
95th percentile per-packet one-way delay: 1.129 ms
Loss rate: 49.42%
```
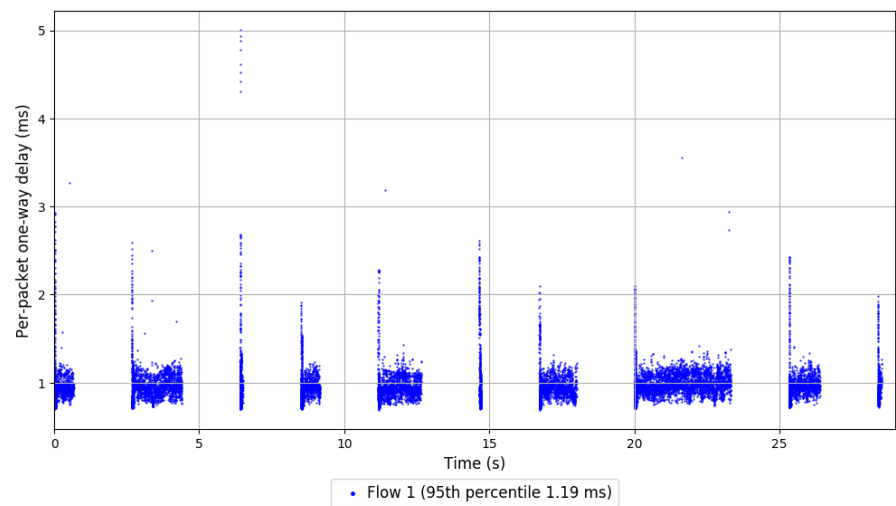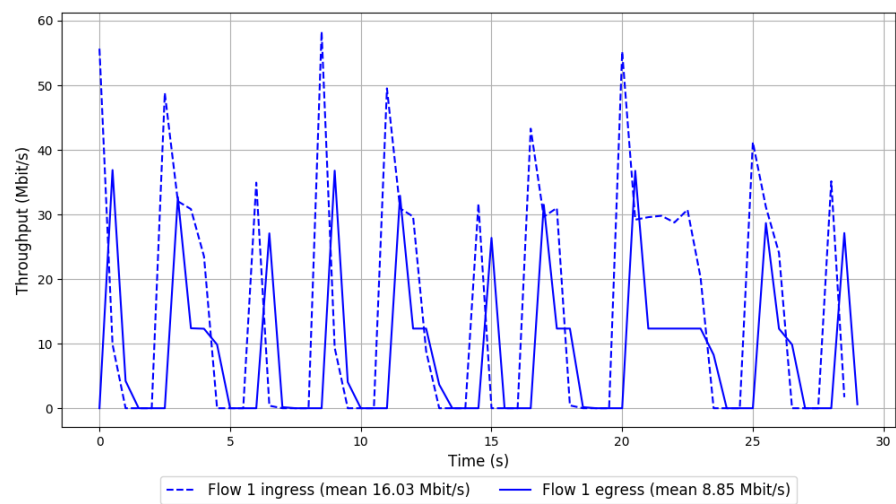
## Run 3: Report of Copa — Data Link

```
Run 4: Statistics of Copa

Start at: 2018-10-26 01:02:22
End at: 2018-10-26 01:02:52
Local clock offset: 0.271 ms
Remote clock offset: 4.619 ms


# Below is generated by plot.py at 2018-10-26 01:55:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.85 Mbit/s
95th percentile per-packet one-way delay: 1.193 ms
Loss rate: 44.77%
-- Flow 1:
Average throughput: 8.85 Mbit/s
95th percentile per-packet one-way delay: 1.193 ms
Loss rate: 44.77%
```

Run 4: Report of Copa — Data Link

```
Run 5: Statistics of Copa

Start at: 2018-10-26 01:28:21
End at: 2018-10-26 01:28:51
Local clock offset: 0.141 ms
Remote clock offset: 3.78 ms


# Below is generated by plot.py at 2018-10-26 01:55:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.71 Mbit/s
95th percentile per-packet one-way delay: 1.178 ms
Loss rate: 50.72%
-- Flow 1:
Average throughput: 9.71 Mbit/s
95th percentile per-packet one-way delay: 1.178 ms
Loss rate: 50.72%
```
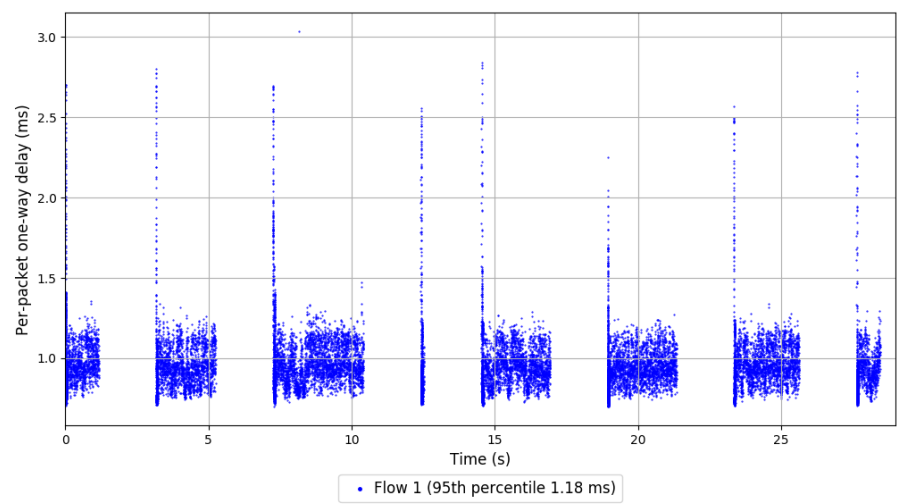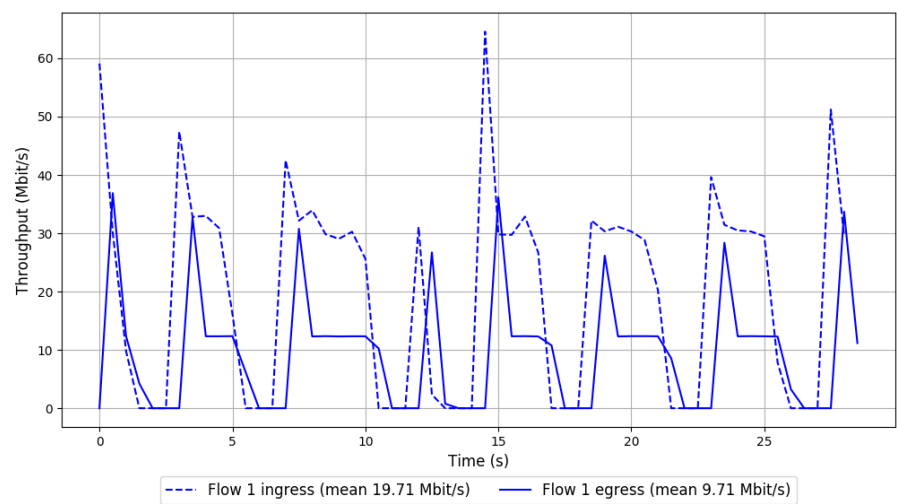
Run 5: Report of Copa — Data Link

```
Run 1: Statistics of TCP Cubic

Start at: 2018-10-25 23:48:33
End at: 2018-10-25 23:49:03
Local clock offset: 0.357 ms
Remote clock offset: 0.229 ms


# Below is generated by plot.py at 2018-10-26 01:55:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 699.72 Mbit/s
95th percentile per-packet one-way delay: 36.351 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 699.72 Mbit/s
95th percentile per-packet one-way delay: 36.351 ms
Loss rate: 0.05%
```
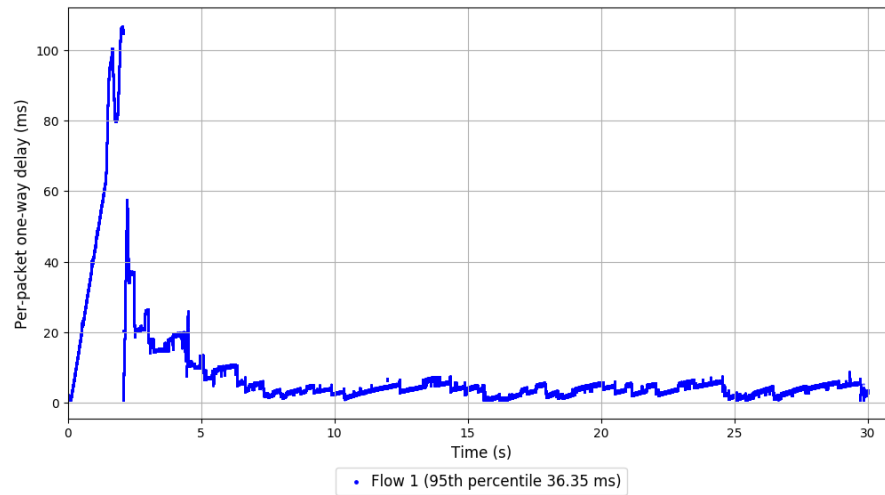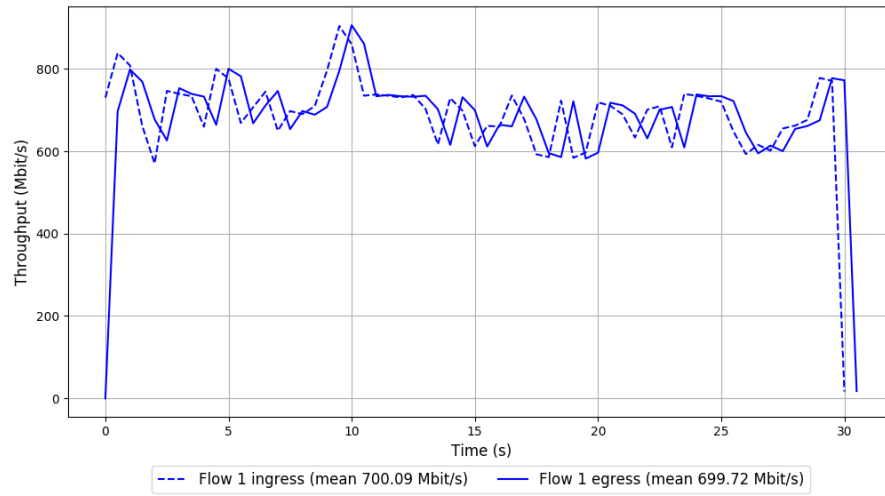
Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2018-10-26 00:14:19
End at: 2018-10-26 00:14:49
Local clock offset: 0.257 ms
Remote clock offset: 0.338 ms


# Below is generated by plot.py at 2018-10-26 01:55:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 756.14 Mbit/s
95th percentile per-packet one-way delay: 37.608 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 756.14 Mbit/s
95th percentile per-packet one-way delay: 37.608 ms
Loss rate: 0.13%
```
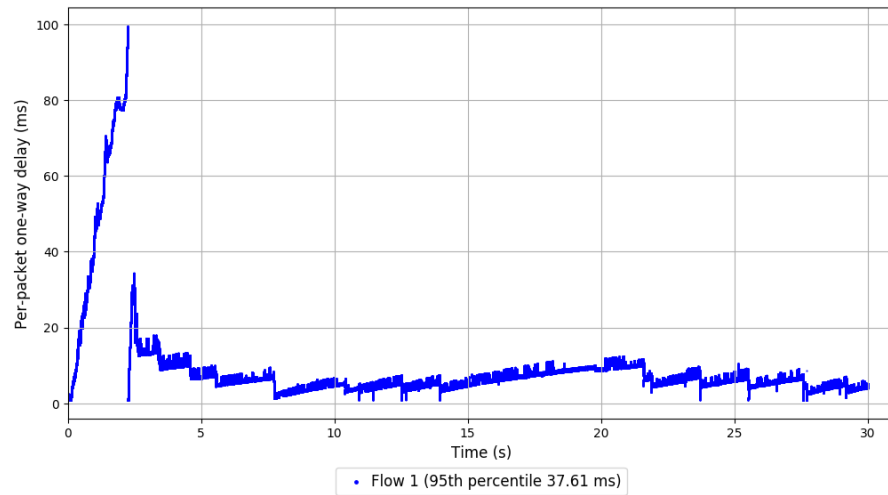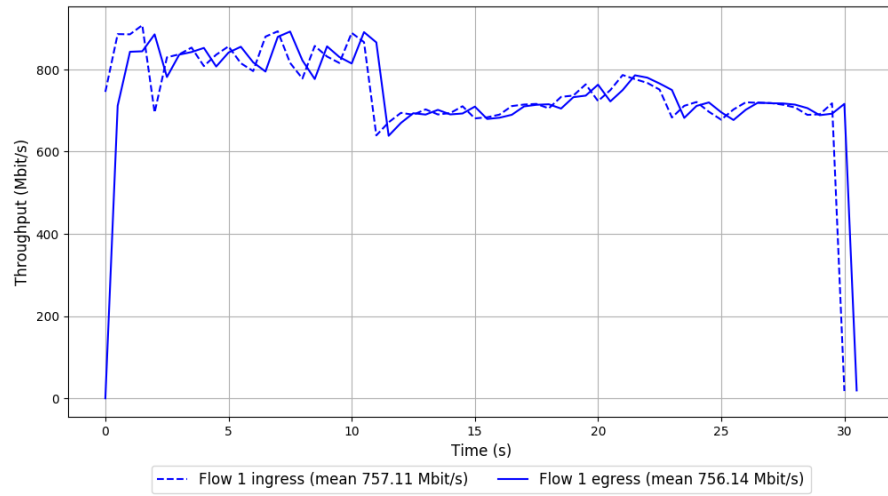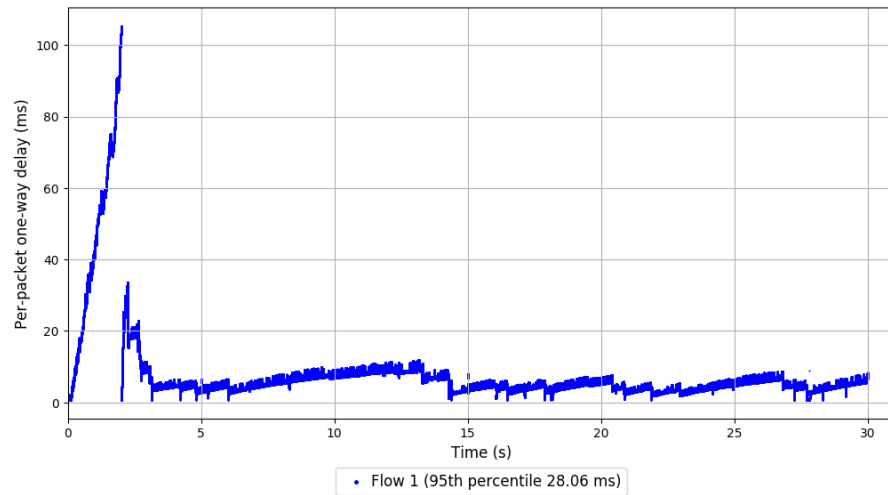
Run 2: Report of TCP Cubic — Data Link



Flow 1 ingress (mean 757.11 Mbit/s)          Flow 1 egress (mean 756.14 Mbit/s)



Flow 1 (95th percentile 37.61 ms)

```
Run 3: Statistics of TCP Cubic

Start at: 2018-10-26 00:40:26
End at: 2018-10-26 00:40:56
Local clock offset: 0.293 ms
Remote clock offset: 2.854 ms


# Below is generated by plot.py at 2018-10-26 01:55:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 745.83 Mbit/s
95th percentile per-packet one-way delay: 28.061 ms
Loss rate: 0.15%
-- Flow 1:
Average throughput: 745.83 Mbit/s
95th percentile per-packet one-way delay: 28.061 ms
Loss rate: 0.15%
```
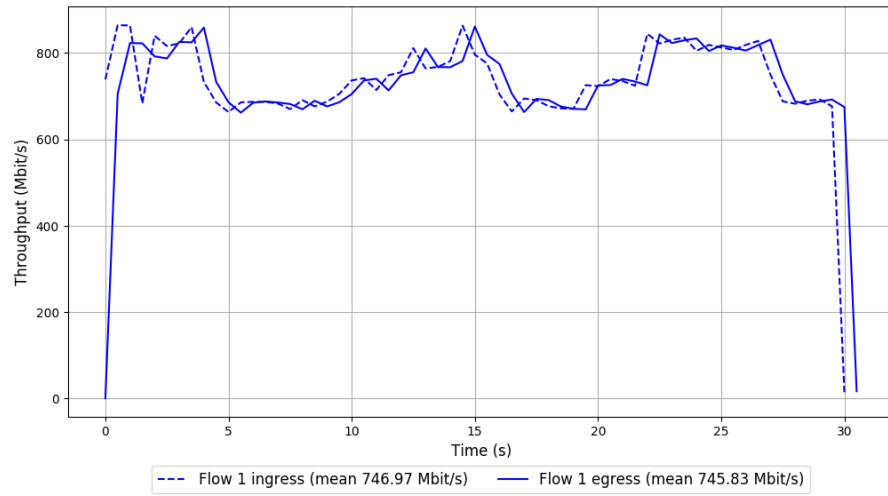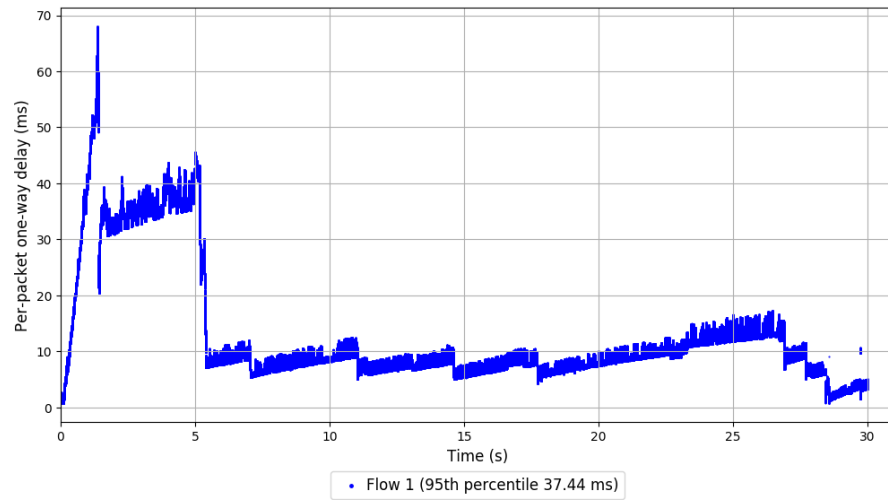
Run 3: Report of TCP Cubic — Data Link



Flow 1 ingress (mean 746.97 Mbit/s) — Flow 1 egress (mean 745.83 Mbit/s)



• Flow 1 (95th percentile 28.06 ms)

```
Run 4: Statistics of TCP Cubic

Start at: 2018-10-26 01:06:27
End at: 2018-10-26 01:06:57
Local clock offset: 0.246 ms
Remote clock offset: 4.151 ms


# Below is generated by plot.py at 2018-10-26 02:01:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 734.16 Mbit/s
95th percentile per-packet one-way delay: 37.435 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 734.16 Mbit/s
95th percentile per-packet one-way delay: 37.435 ms
Loss rate: 0.07%
```
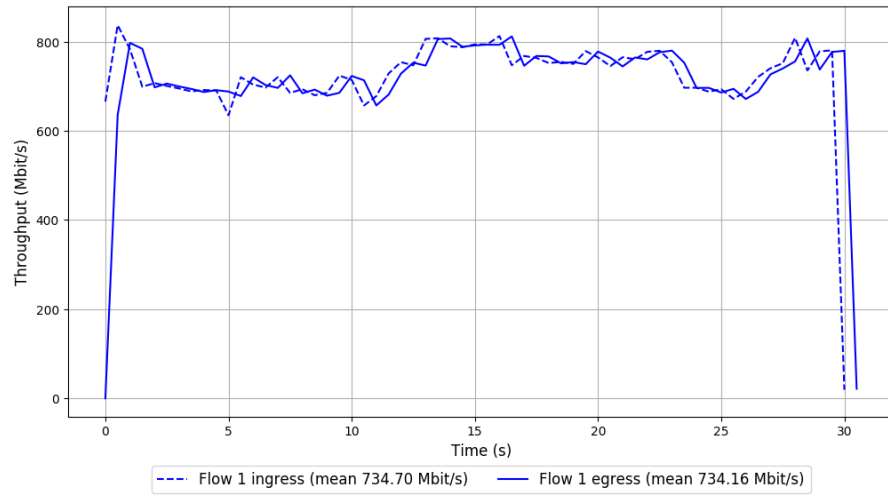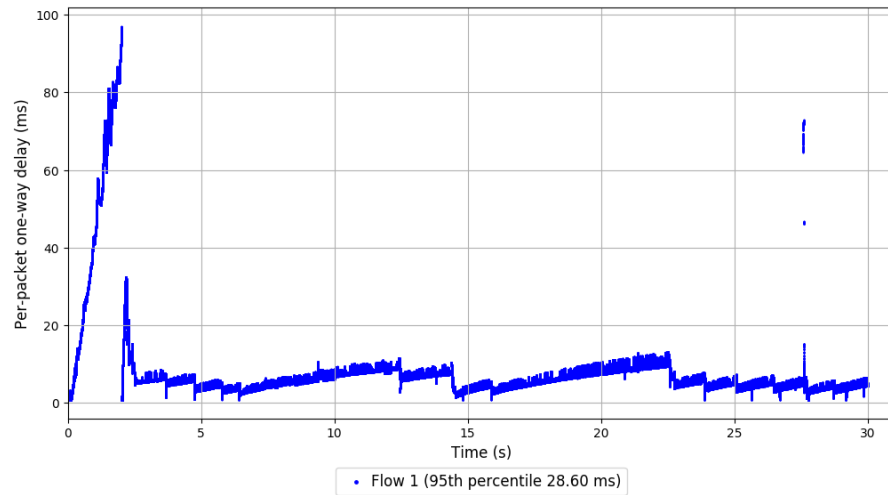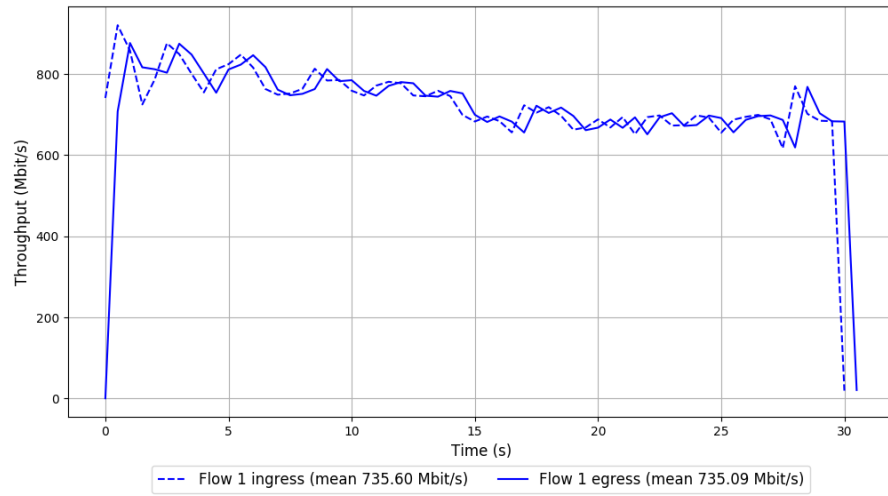
Run 4: Report of TCP Cubic — Data Link



Flow 1 ingress (mean 734.70 Mbit/s)    Flow 1 egress (mean 734.16 Mbit/s)



Flow 1 (95th percentile 37.44 ms)

```
Run 5: Statistics of TCP Cubic

Start at: 2018-10-26 01:32:38
End at: 2018-10-26 01:33:08
Local clock offset: 0.156 ms
Remote clock offset: 3.918 ms


# Below is generated by plot.py at 2018-10-26 02:02:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 735.09 Mbit/s
95th percentile per-packet one-way delay: 28.597 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 735.09 Mbit/s
95th percentile per-packet one-way delay: 28.597 ms
Loss rate: 0.07%
```

Run 5: Report of TCP Cubic — Data Link



Flow 1 ingress (mean 735.60 Mbit/s)    Flow 1 egress (mean 735.09 Mbit/s)

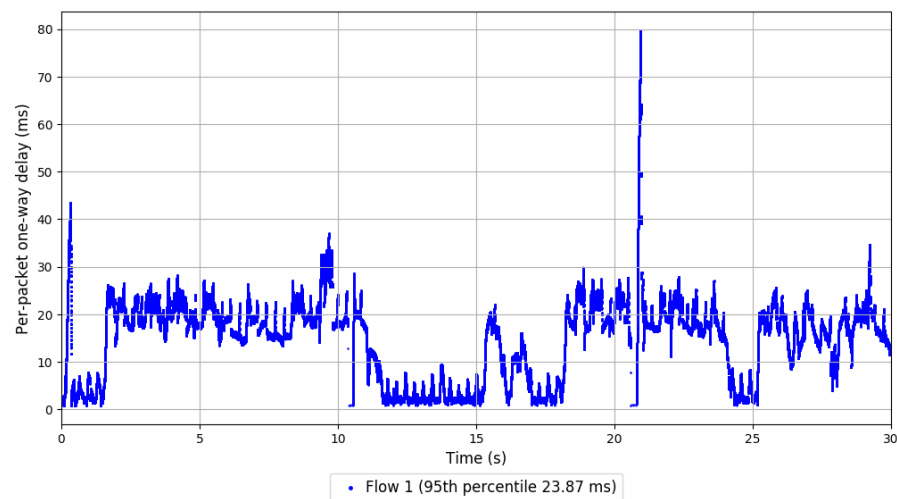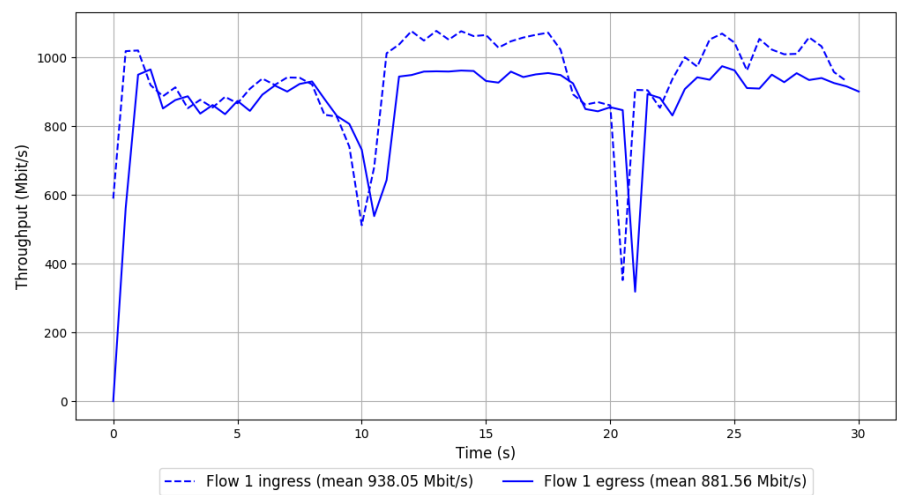

• Flow 1 (95th percentile 28.60 ms)

```
Run 1: Statistics of FillP

Start at: 2018-10-25 23:54:26
End at: 2018-10-25 23:54:56
Local clock offset: 0.209 ms
Remote clock offset: 0.308 ms


# Below is generated by plot.py at 2018-10-26 02:07:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 881.56 Mbit/s
95th percentile per-packet one-way delay: 23.869 ms
Loss rate: 6.02%
-- Flow 1:
Average throughput: 881.56 Mbit/s
95th percentile per-packet one-way delay: 23.869 ms
Loss rate: 6.02%
```
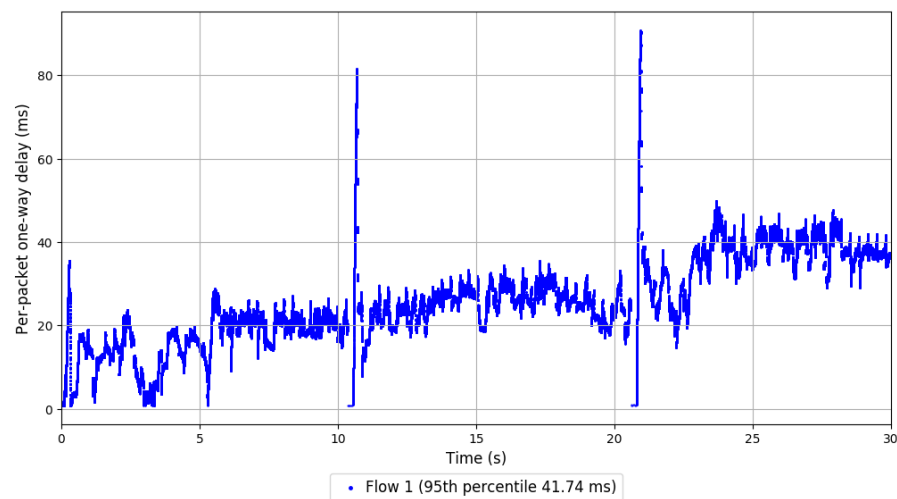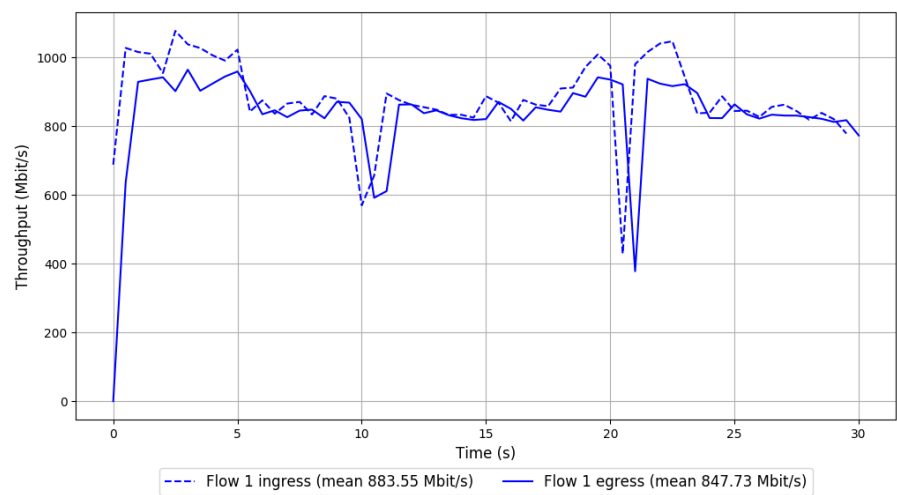
## Run 1: Report of FillP — Data Link



Flow 1 ingress (mean 938.05 Mbit/s) --- Flow 1 egress (mean 881.56 Mbit/s)



Flow 1 (95th percentile 23.87 ms)

36

```
Run 2: Statistics of FillP

Start at: 2018-10-26 00:20:23
End at: 2018-10-26 00:20:53
Local clock offset: 0.316 ms
Remote clock offset: 0.364 ms


# Below is generated by plot.py at 2018-10-26 02:07:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 847.73 Mbit/s
95th percentile per-packet one-way delay: 41.745 ms
Loss rate: 4.05%
-- Flow 1:
Average throughput: 847.73 Mbit/s
95th percentile per-packet one-way delay: 41.745 ms
Loss rate: 4.05%
```

Run 2: Report of FillP — Data Link

```
Run 3: Statistics of FillP

Start at: 2018-10-26 00:46:22
End at: 2018-10-26 00:46:52
Local clock offset: 0.262 ms
Remote clock offset: 3.5 ms


# Below is generated by plot.py at 2018-10-26 02:07:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 886.10 Mbit/s
95th percentile per-packet one-way delay: 30.093 ms
Loss rate: 6.08%
-- Flow 1:
Average throughput: 886.10 Mbit/s
95th percentile per-packet one-way delay: 30.093 ms
Loss rate: 6.08%
```
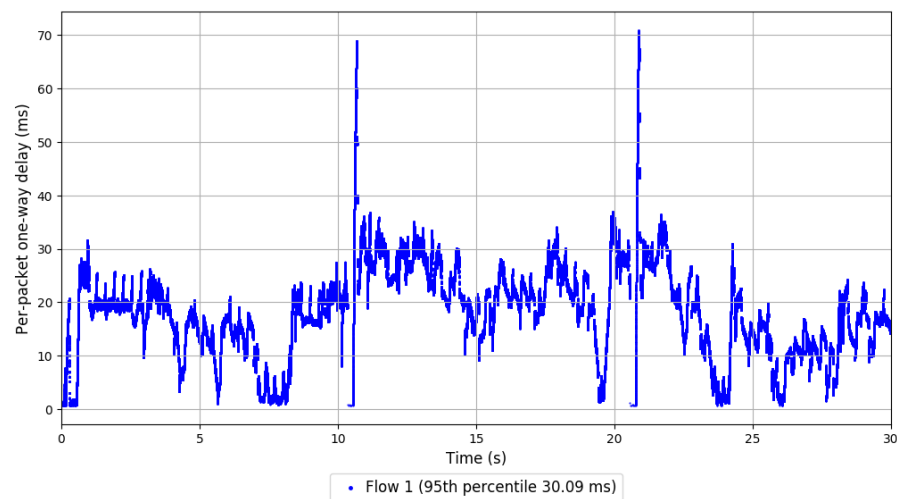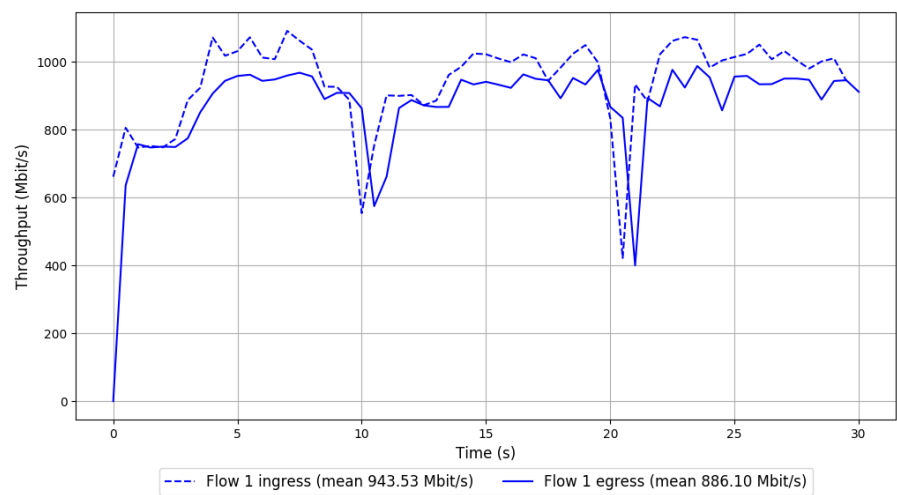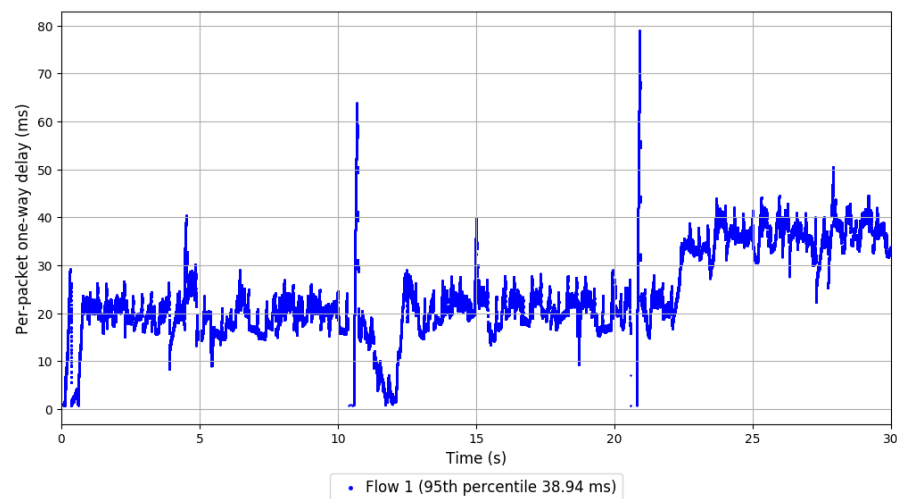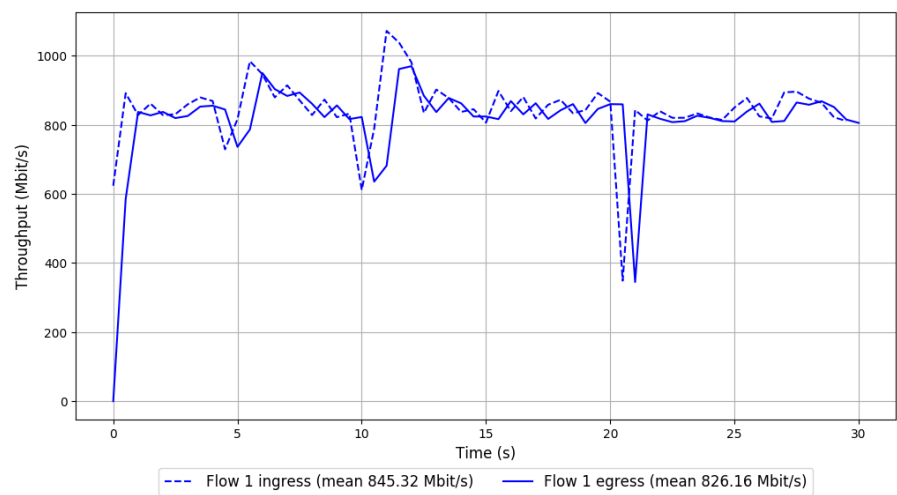
## Run 3: Report of FillP — Data Link



Flow 1 ingress (mean 943.53 Mbit/s) --- Flow 1 egress (mean 886.10 Mbit/s)



• Flow 1 (95th percentile 30.09 ms)

```
Run 4: Statistics of FillP

Start at: 2018-10-26 01:12:22
End at: 2018-10-26 01:12:52
Local clock offset: 0.211 ms
Remote clock offset: 3.802 ms


# Below is generated by plot.py at 2018-10-26 02:07:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 826.16 Mbit/s
95th percentile per-packet one-way delay: 38.935 ms
Loss rate: 2.27%
-- Flow 1:
Average throughput: 826.16 Mbit/s
95th percentile per-packet one-way delay: 38.935 ms
Loss rate: 2.27%
```
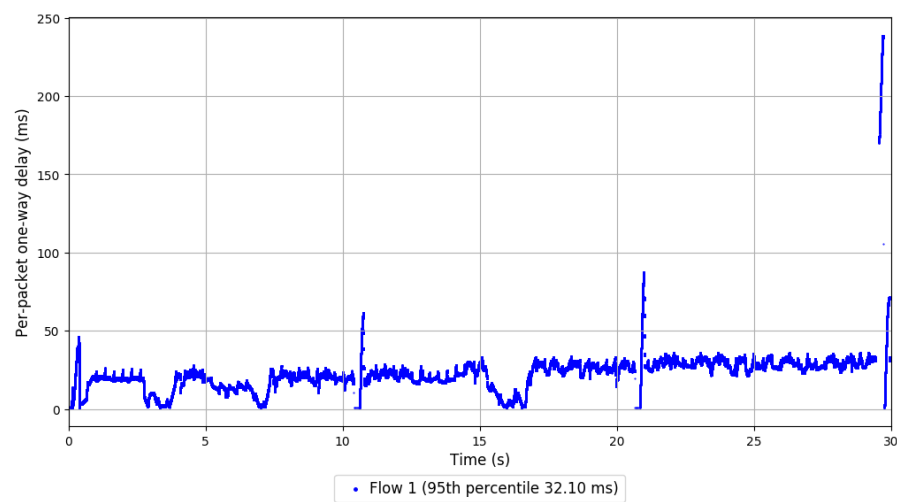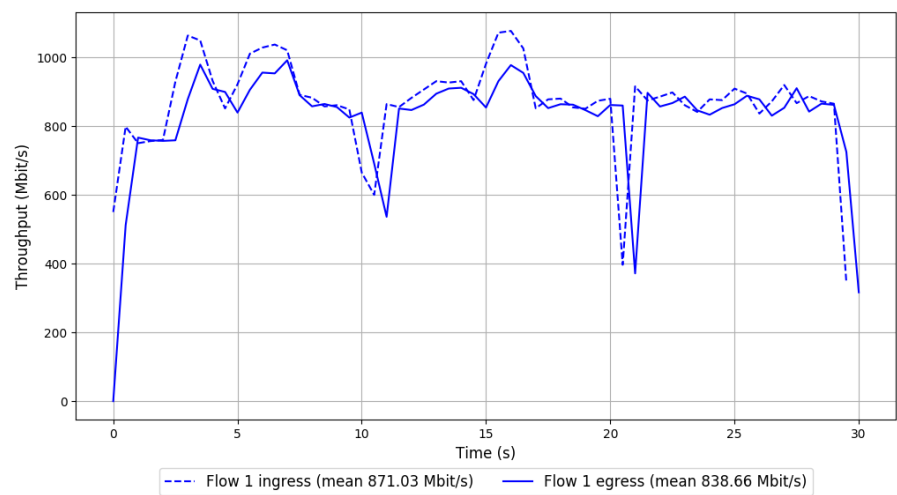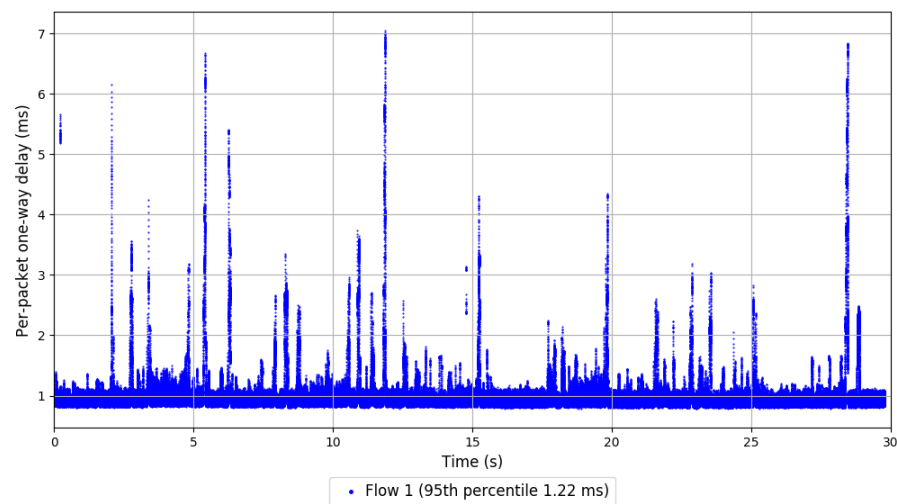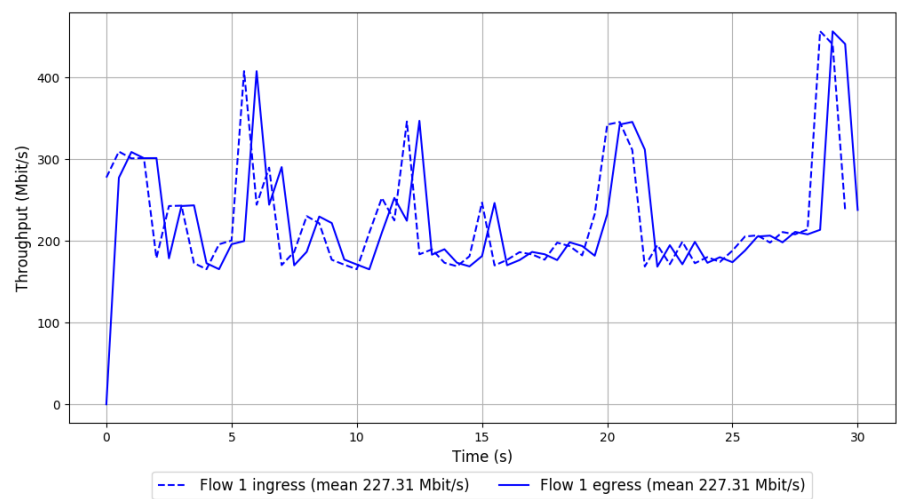
# Run 4: Report of FillP — Data Link



Flow 1 ingress (mean 845.32 Mbit/s)    Flow 1 egress (mean 826.16 Mbit/s)



• Flow 1 (95th percentile 38.94 ms)

```
Run 5: Statistics of FillP

Start at: 2018-10-26 01:38:36
End at: 2018-10-26 01:39:06
Local clock offset: 0.206 ms
Remote clock offset: 3.94 ms


# Below is generated by plot.py at 2018-10-26 02:07:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 838.66 Mbit/s
95th percentile per-packet one-way delay: 32.104 ms
Loss rate: 3.72%
-- Flow 1:
Average throughput: 838.66 Mbit/s
95th percentile per-packet one-way delay: 32.104 ms
Loss rate: 3.72%
```

Run 5: Report of FillP — Data Link

```
Run 1: Statistics of Indigo

Start at: 2018-10-25 23:52:59
End at: 2018-10-25 23:53:29
Local clock offset: 0.232 ms
Remote clock offset: 0.324 ms


# Below is generated by plot.py at 2018-10-26 02:07:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 227.31 Mbit/s
95th percentile per-packet one-way delay: 1.218 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 227.31 Mbit/s
95th percentile per-packet one-way delay: 1.218 ms
Loss rate: 0.00%
```
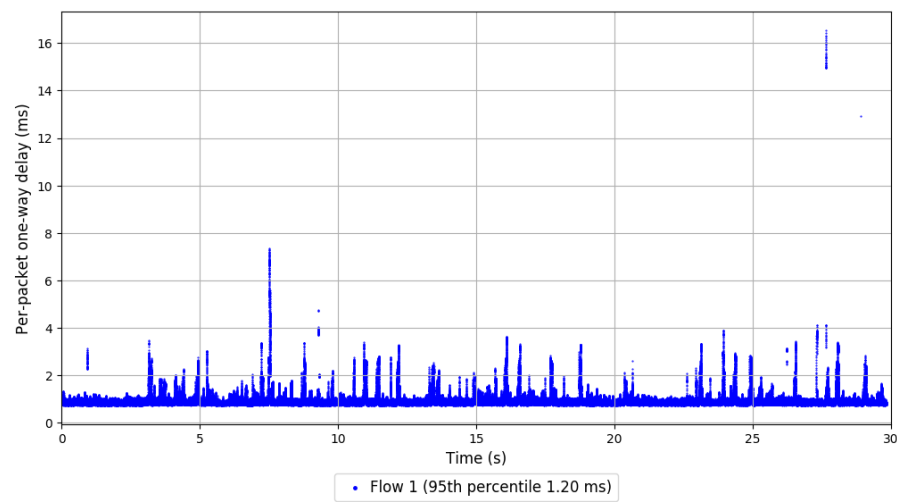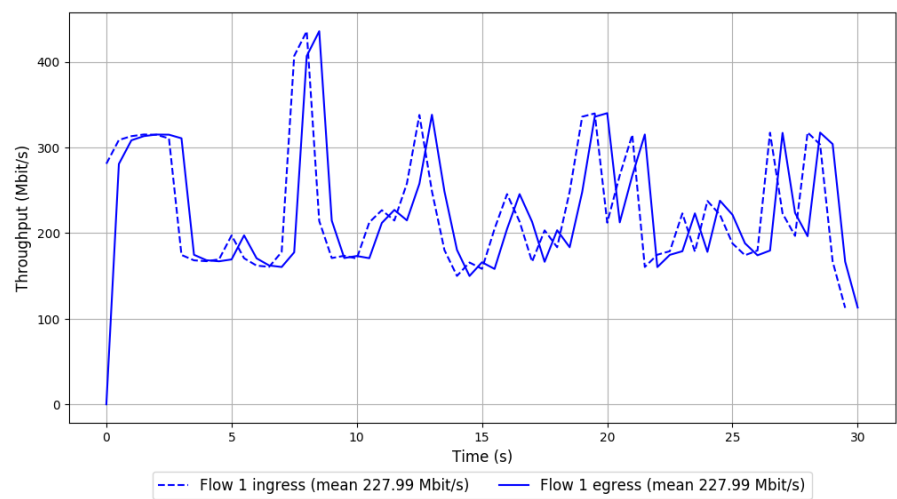
Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-10-26 00:18:56
End at: 2018-10-26 00:19:26
Local clock offset: 0.3 ms
Remote clock offset: 0.298 ms


# Below is generated by plot.py at 2018-10-26 02:07:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 227.99 Mbit/s
95th percentile per-packet one-way delay: 1.197 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 227.99 Mbit/s
95th percentile per-packet one-way delay: 1.197 ms
Loss rate: 0.00%
```
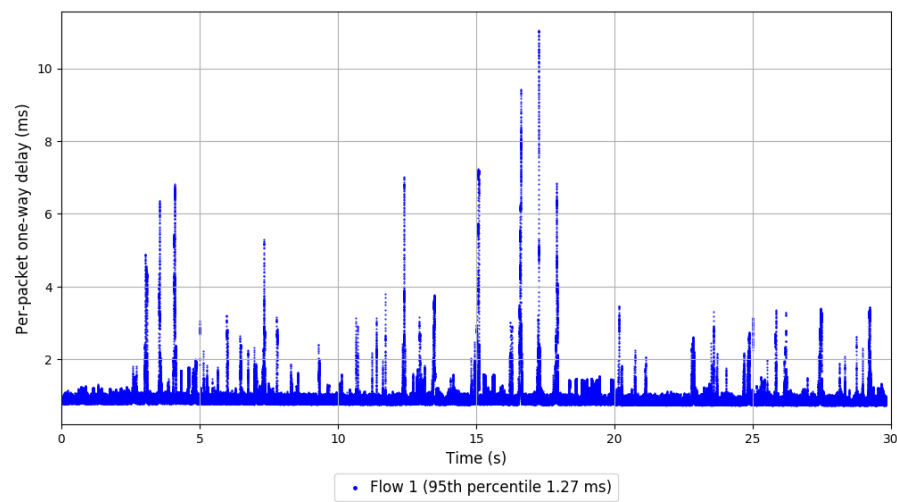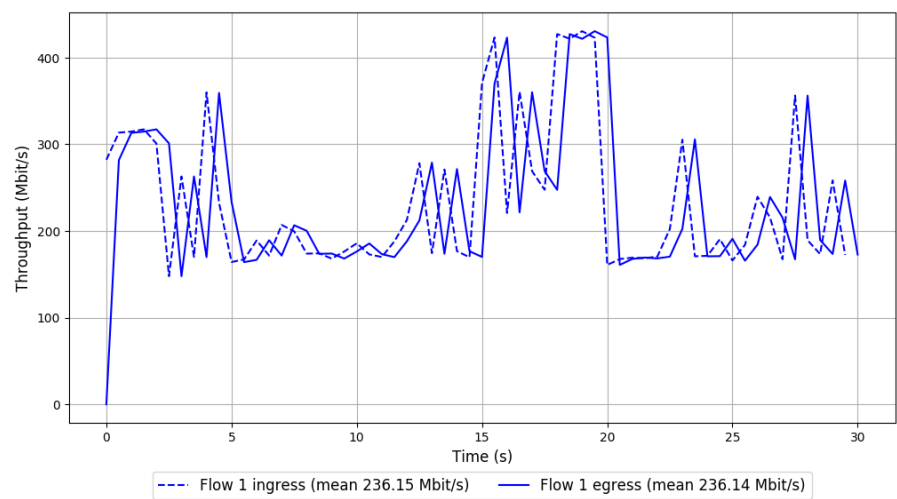
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-10-26 00:44:54
End at: 2018-10-26 00:45:24
Local clock offset: 0.27 ms
Remote clock offset: 3.442 ms


# Below is generated by plot.py at 2018-10-26 02:07:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 236.14 Mbit/s
95th percentile per-packet one-way delay: 1.272 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 236.14 Mbit/s
95th percentile per-packet one-way delay: 1.272 ms
Loss rate: 0.00%
```
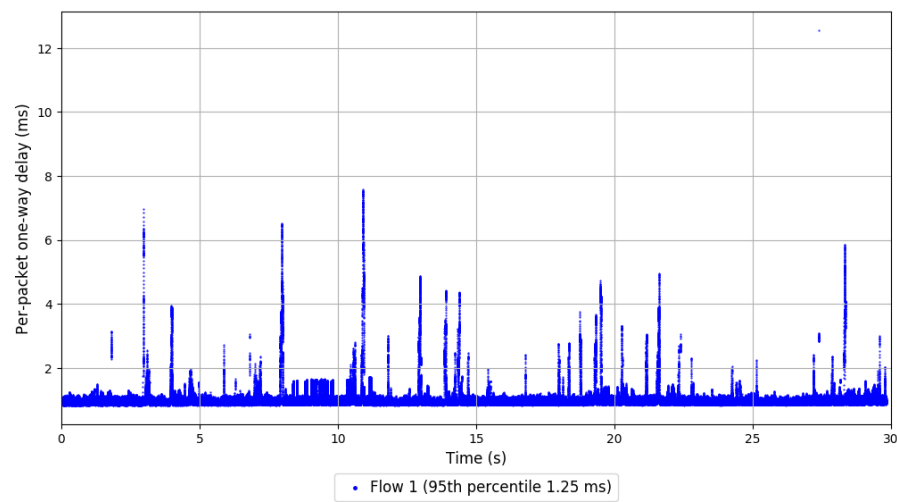
Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2018-10-26 01:10:55
End at: 2018-10-26 01:11:25
Local clock offset: 0.224 ms
Remote clock offset: 3.946 ms


# Below is generated by plot.py at 2018-10-26 02:07:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 229.17 Mbit/s
95th percentile per-packet one-way delay: 1.246 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 229.17 Mbit/s
95th percentile per-packet one-way delay: 1.246 ms
Loss rate: 0.00%
```
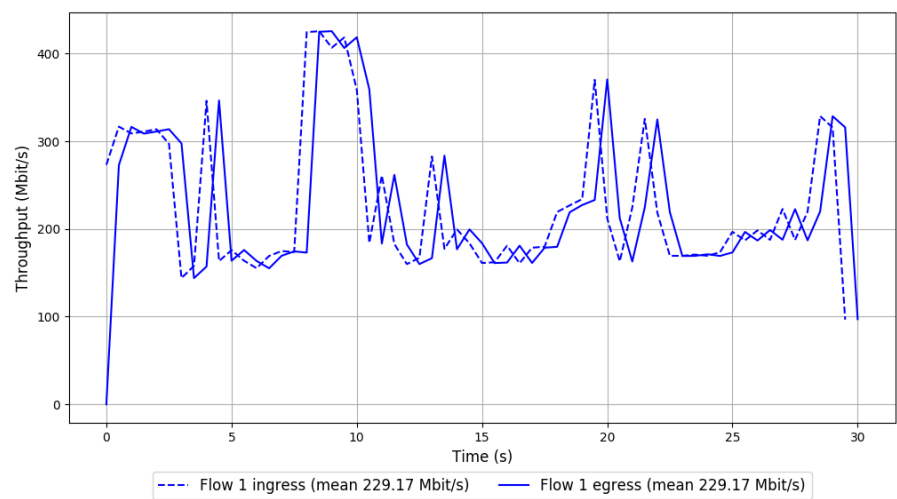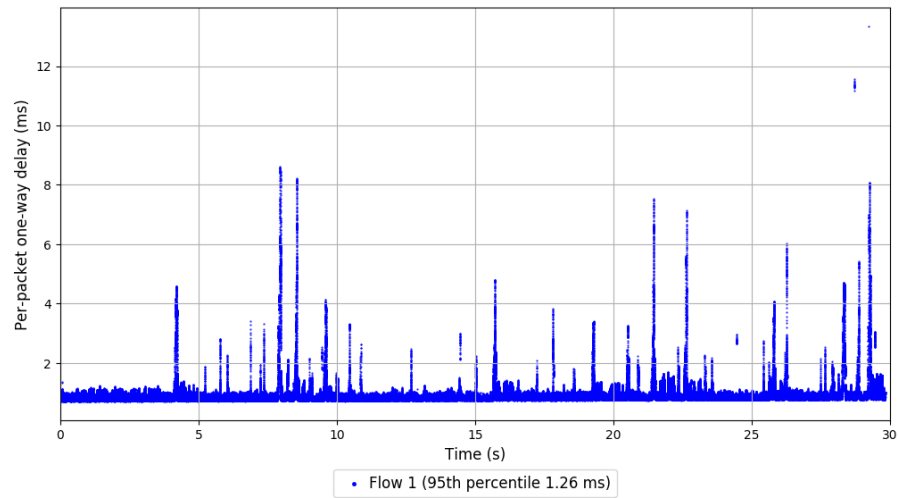
Run 4: Report of Indigo — Data Link



Flow 1 ingress (mean 229.17 Mbit/s)    Flow 1 egress (mean 229.17 Mbit/s)



Flow 1 (95th percentile 1.25 ms)

```
Run 5: Statistics of Indigo

Start at: 2018-10-26 01:37:08
End at: 2018-10-26 01:37:38
Local clock offset: 0.203 ms
Remote clock offset: 3.968 ms


# Below is generated by plot.py at 2018-10-26 02:07:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 230.16 Mbit/s
95th percentile per-packet one-way delay: 1.260 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 230.16 Mbit/s
95th percentile per-packet one-way delay: 1.260 ms
Loss rate: 0.01%
```
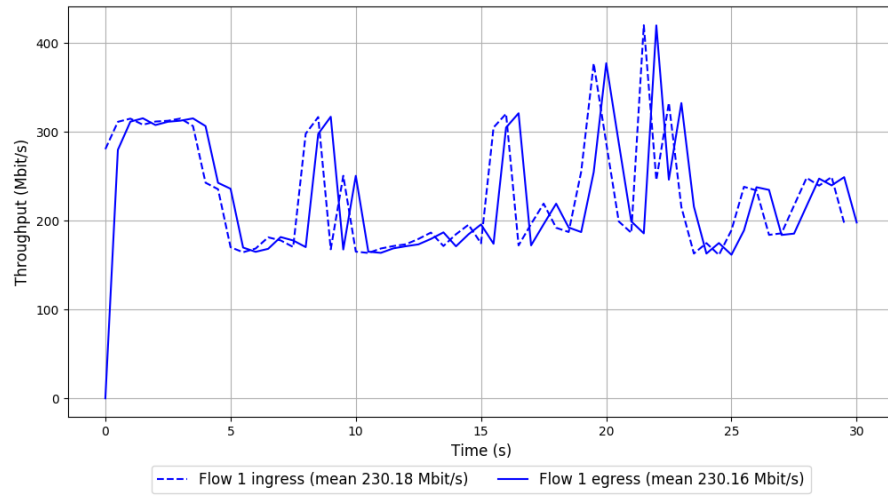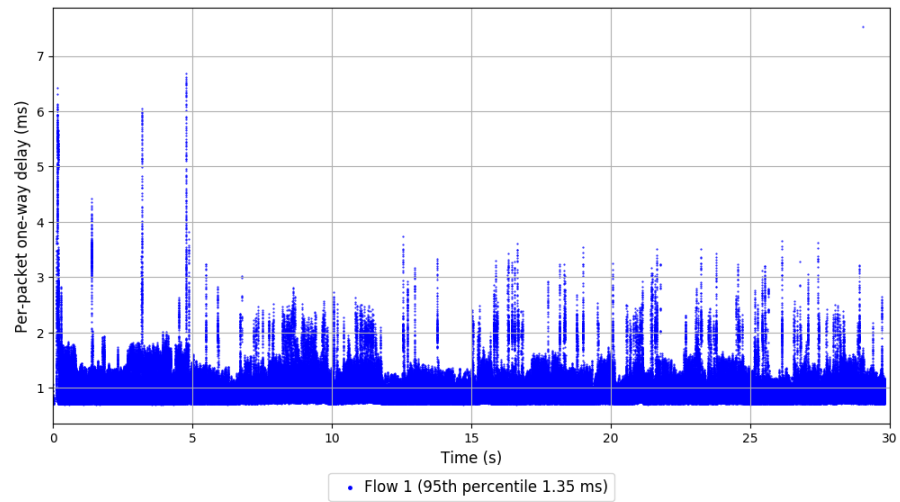
Run 5: Report of Indigo — Data Link

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

Start at: 2018-10-25 23:47:10
End at: 2018-10-25 23:47:40
Local clock offset: 0.336 ms
Remote clock offset: 0.122 ms


# Below is generated by plot.py at 2018-10-26 02:07:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 172.61 Mbit/s
95th percentile per-packet one-way delay: 1.350 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 172.61 Mbit/s
95th percentile per-packet one-way delay: 1.350 ms
Loss rate: 0.00%
```
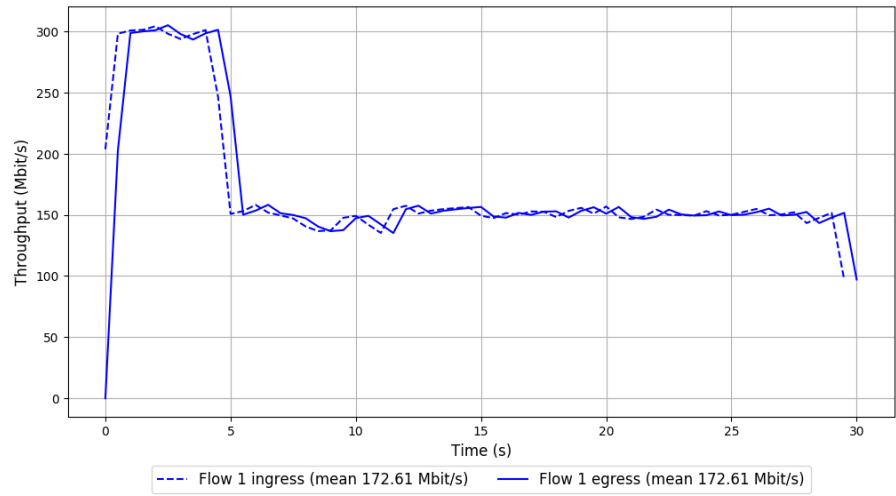
Run 1: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-10-26 00:12:57
End at: 2018-10-26 00:13:27
Local clock offset: 0.259 ms
Remote clock offset: 0.215 ms


# Below is generated by plot.py at 2018-10-26 02:07:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 150.99 Mbit/s
95th percentile per-packet one-way delay: 1.271 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 150.99 Mbit/s
95th percentile per-packet one-way delay: 1.271 ms
Loss rate: 0.00%
```
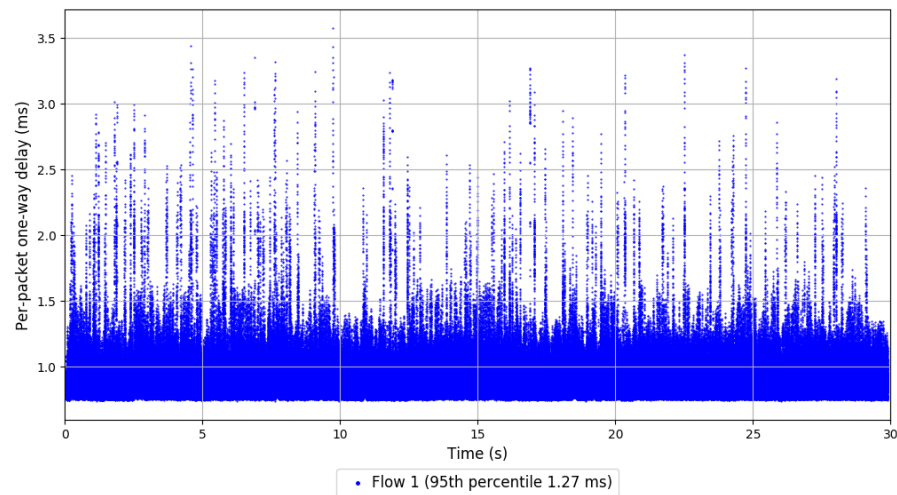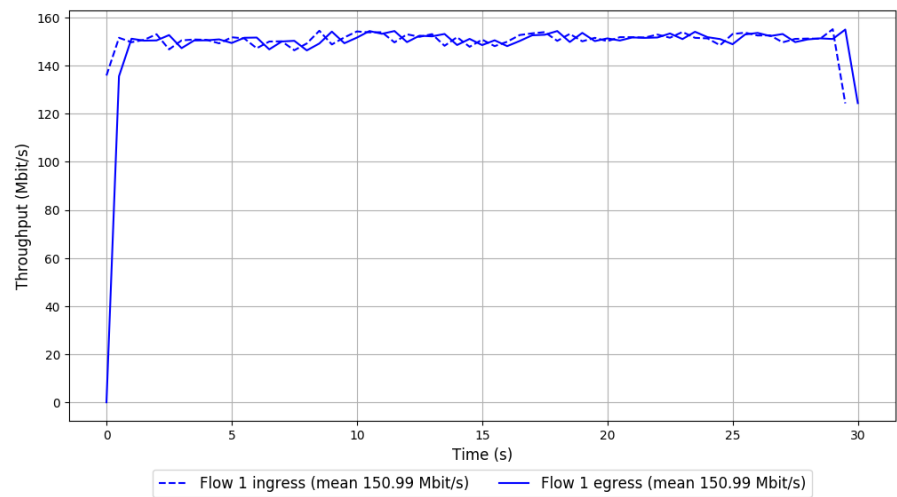
Run 2: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-10-26 00:39:03
End at: 2018-10-26 00:39:33
Local clock offset: 0.289 ms
Remote clock offset: 2.781 ms


# Below is generated by plot.py at 2018-10-26 02:07:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 154.24 Mbit/s
95th percentile per-packet one-way delay: 1.282 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 154.24 Mbit/s
95th percentile per-packet one-way delay: 1.282 ms
Loss rate: 0.00%
```
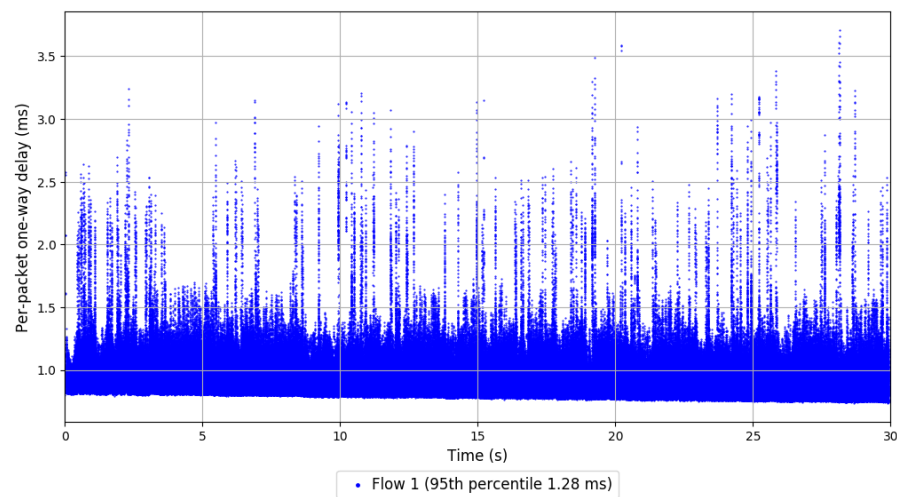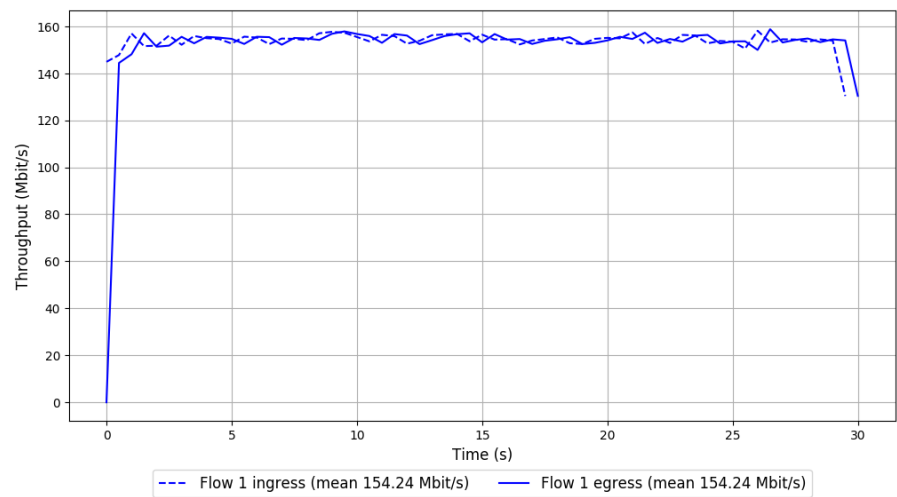
Run 3: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-10-26 01:05:00
End at: 2018-10-26 01:05:30
Local clock offset: 0.242 ms
Remote clock offset: 4.348 ms


# Below is generated by plot.py at 2018-10-26 02:09:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 301.35 Mbit/s
95th percentile per-packet one-way delay: 1.409 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 301.35 Mbit/s
95th percentile per-packet one-way delay: 1.409 ms
Loss rate: 0.00%
```
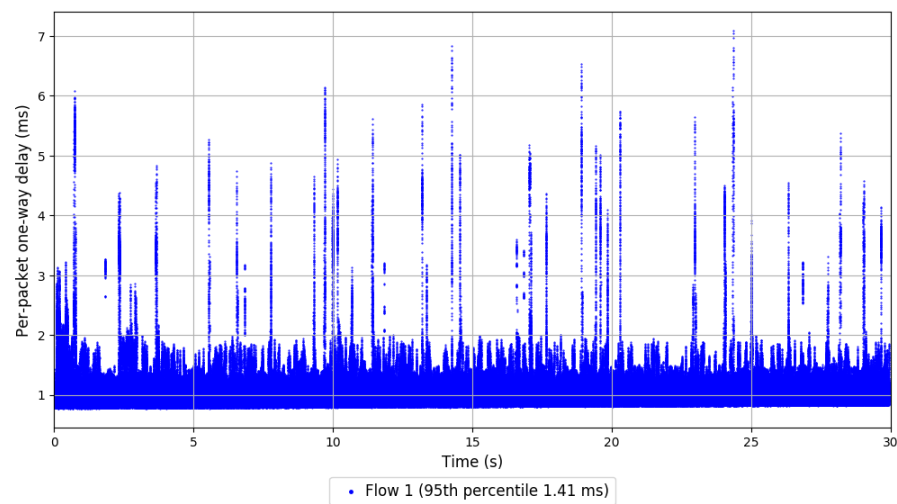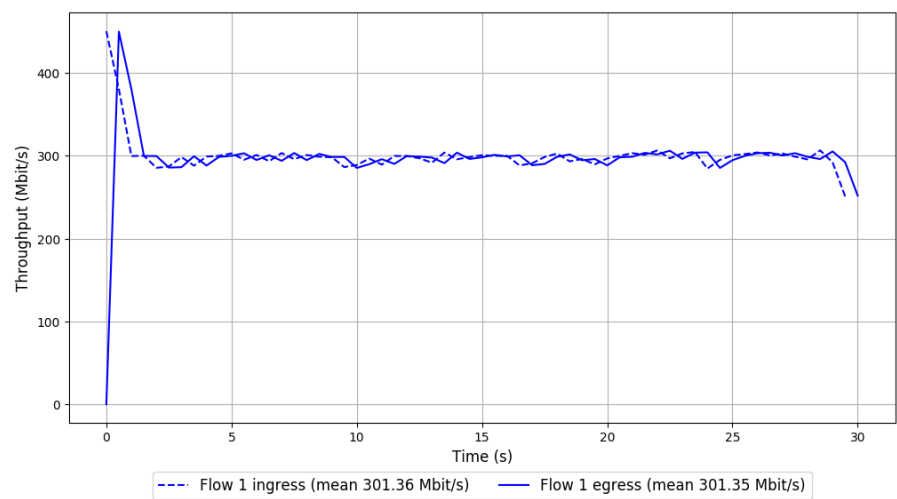
Run 4: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-10-26 01:31:15
End at: 2018-10-26 01:31:45
Local clock offset: 0.13 ms
Remote clock offset: 3.923 ms


# Below is generated by plot.py at 2018-10-26 02:09:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 153.30 Mbit/s
95th percentile per-packet one-way delay: 1.314 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 153.30 Mbit/s
95th percentile per-packet one-way delay: 1.314 ms
Loss rate: 0.00%
```
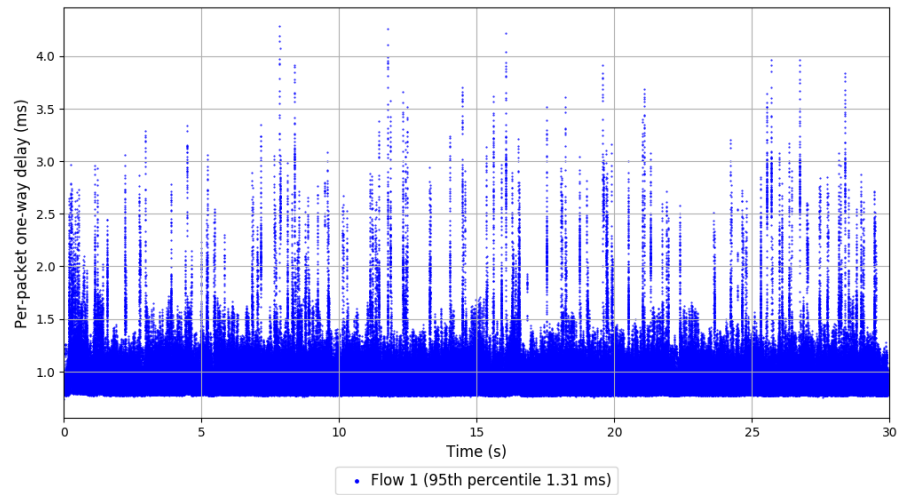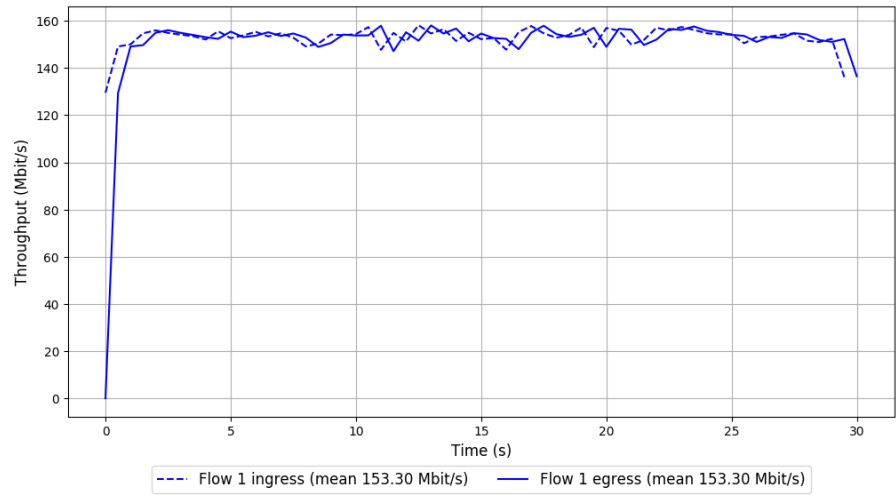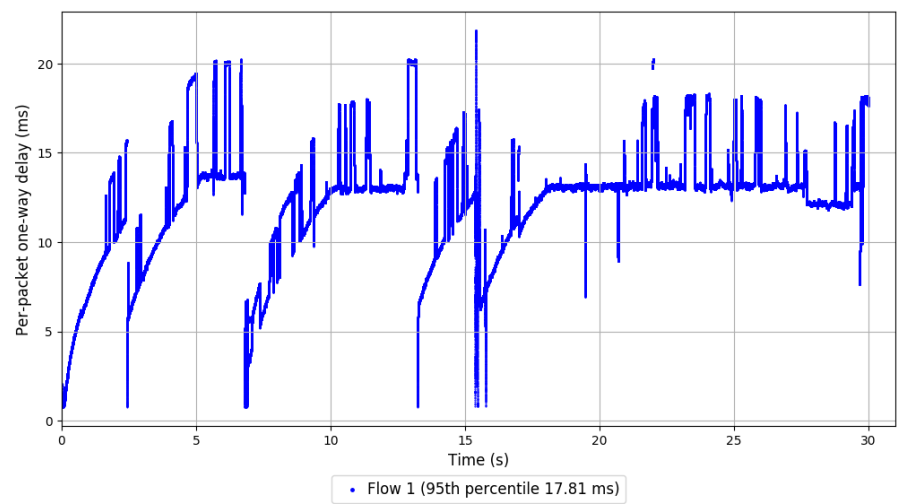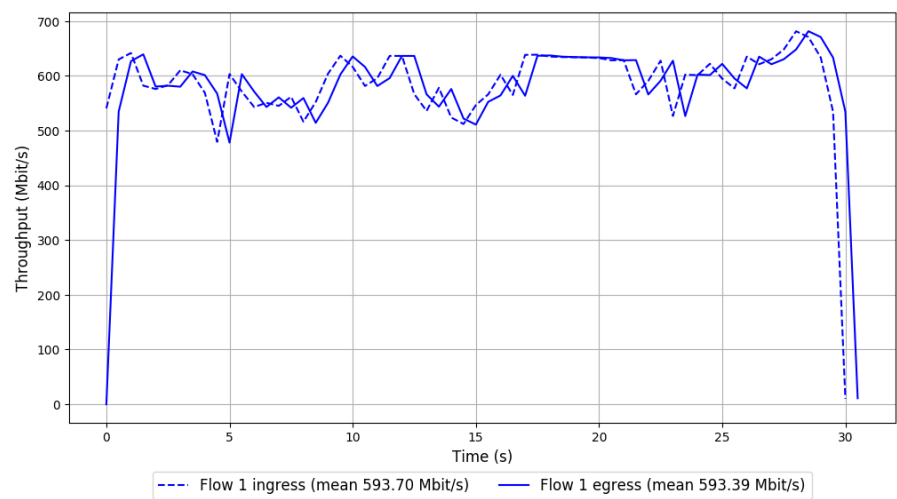
Run 5: Report of Indigo-96d2da3 — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2018-10-25 23:39:58
End at: 2018-10-25 23:40:28
Local clock offset: 0.012 ms
Remote clock offset: 0.025 ms

# Below is generated by plot.py at 2018-10-26 02:13:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 593.39 Mbit/s
95th percentile per-packet one-way delay: 17.811 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 593.39 Mbit/s
95th percentile per-packet one-way delay: 17.811 ms
Loss rate: 0.05%
```

# Run 1: Report of LEDBAT — Data Link



Flow 1 ingress (mean 593.70 Mbit/s)    Flow 1 egress (mean 593.39 Mbit/s)



• Flow 1 (95th percentile 17.81 ms)

```
Run 2: Statistics of LEDBAT

Start at: 2018-10-26 00:05:49
End at: 2018-10-26 00:06:19
Local clock offset: 0.215 ms
Remote clock offset: 0.237 ms

# Below is generated by plot.py at 2018-10-26 02:13:57
# Datalink statistics
-- Total of 1 flow:
Average throughput: 593.38 Mbit/s
95th percentile per-packet one-way delay: 16.358 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 593.38 Mbit/s
95th percentile per-packet one-way delay: 16.358 ms
Loss rate: 0.05%
```
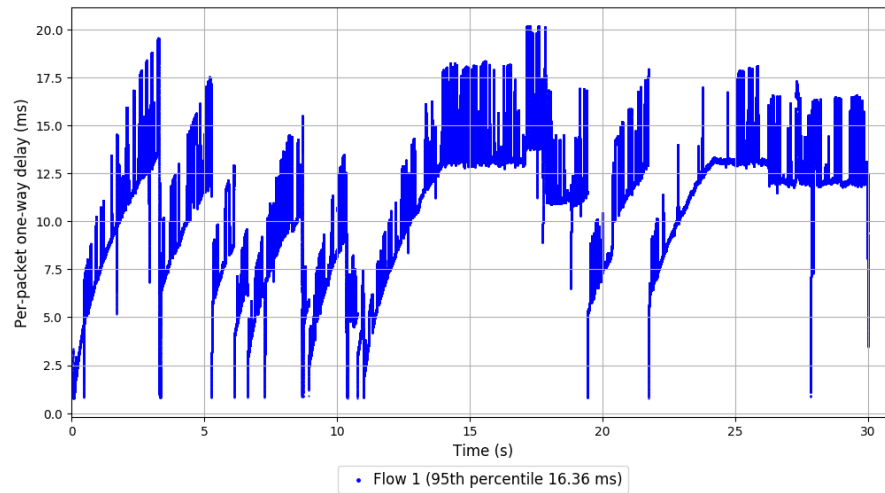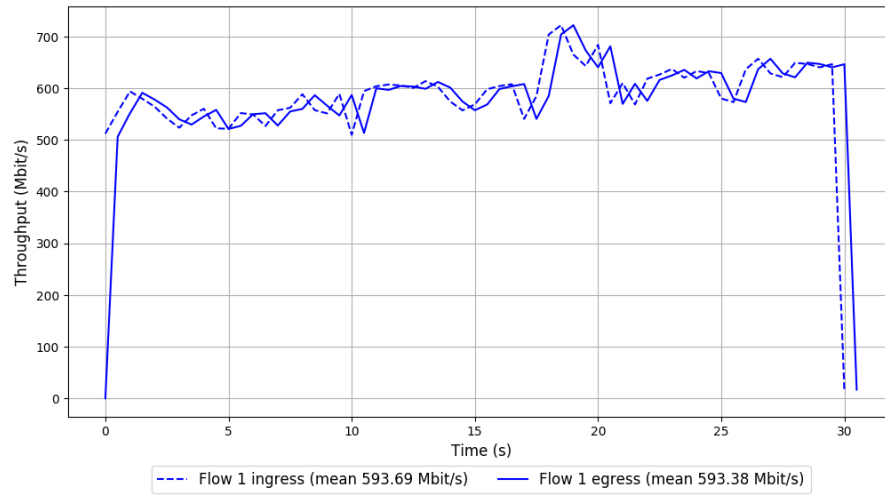
Run 2: Report of LEDBAT — Data Link



Flow 1 ingress (mean 593.69 Mbit/s)    Flow 1 egress (mean 593.38 Mbit/s)



• Flow 1 (95th percentile 16.36 ms)

```
Run 3: Statistics of LEDBAT

Start at: 2018-10-26 00:31:52
End at: 2018-10-26 00:32:22
Local clock offset: 0.409 ms
Remote clock offset: 1.376 ms


# Below is generated by plot.py at 2018-10-26 02:14:10
# Datalink statistics
-- Total of 1 flow:
Average throughput: 596.38 Mbit/s
95th percentile per-packet one-way delay: 15.076 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 596.38 Mbit/s
95th percentile per-packet one-way delay: 15.076 ms
Loss rate: 0.06%
```
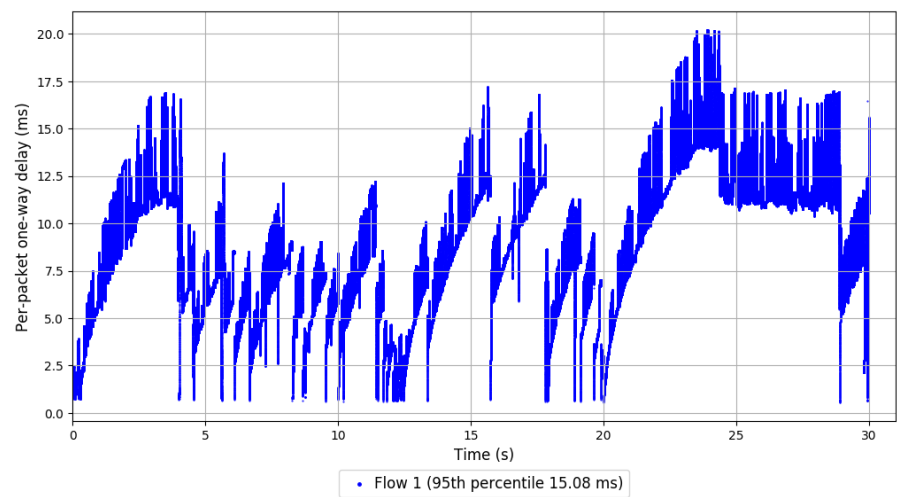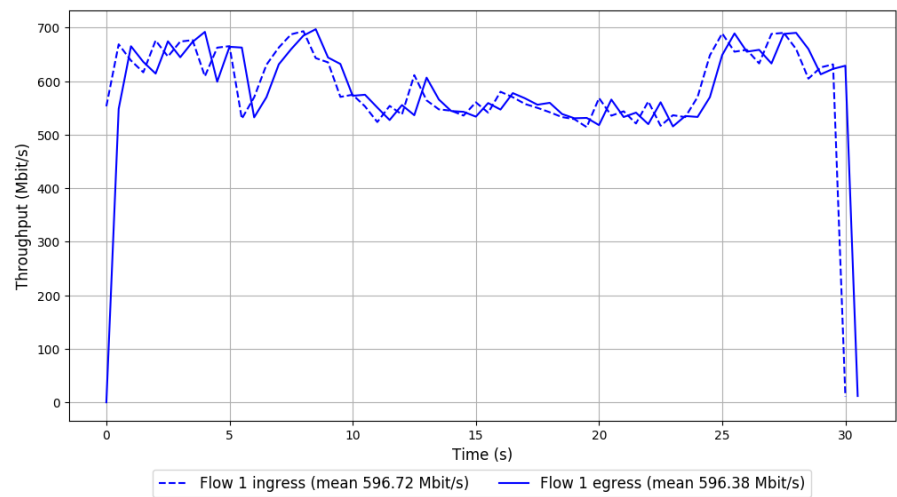
Run 3: Report of LEDBAT — Data Link



Flow 1 ingress (mean 596.72 Mbit/s)   Flow 1 egress (mean 596.38 Mbit/s)



Flow 1 (95th percentile 15.08 ms)

```
Run 4: Statistics of LEDBAT

Start at: 2018-10-26 00:58:01
End at: 2018-10-26 00:58:31
Local clock offset: 0.284 ms
Remote clock offset: 4.387 ms


# Below is generated by plot.py at 2018-10-26 02:14:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 613.19 Mbit/s
95th percentile per-packet one-way delay: 16.614 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 613.19 Mbit/s
95th percentile per-packet one-way delay: 16.614 ms
Loss rate: 0.04%
```
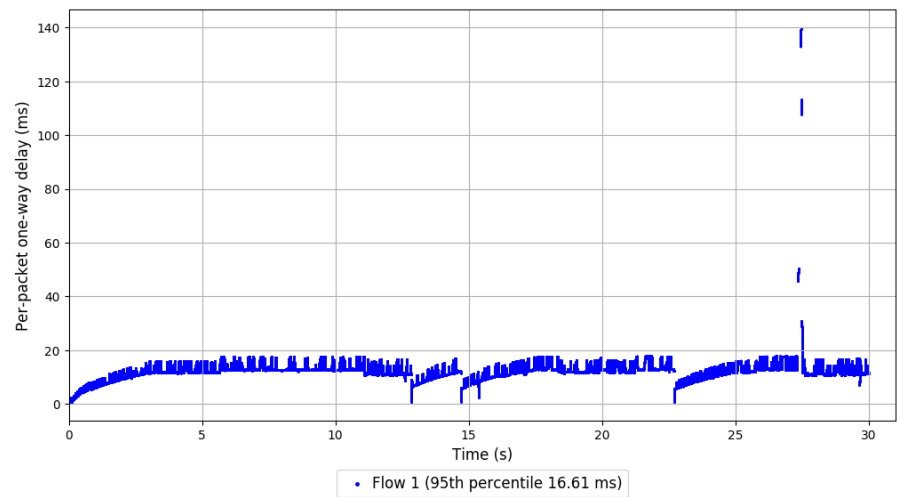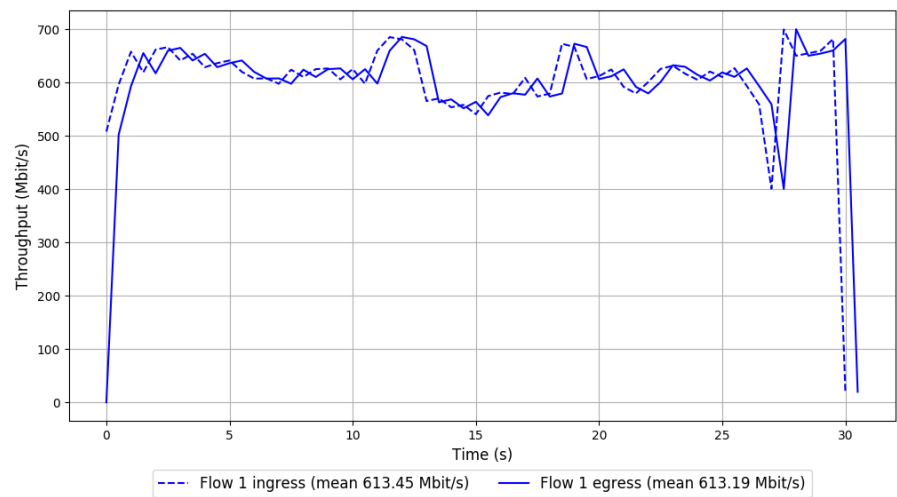
Run 4: Report of LEDBAT — Data Link



Flow 1 ingress (mean 613.45 Mbit/s)    Flow 1 egress (mean 613.19 Mbit/s)



Flow 1 (95th percentile 16.61 ms)

```
Run 5: Statistics of LEDBAT

Start at: 2018-10-26 01:23:59
End at: 2018-10-26 01:24:29
Local clock offset: 0.163 ms
Remote clock offset: 3.742 ms


# Below is generated by plot.py at 2018-10-26 02:15:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 645.40 Mbit/s
95th percentile per-packet one-way delay: 17.125 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 645.40 Mbit/s
95th percentile per-packet one-way delay: 17.125 ms
Loss rate: 0.05%
```
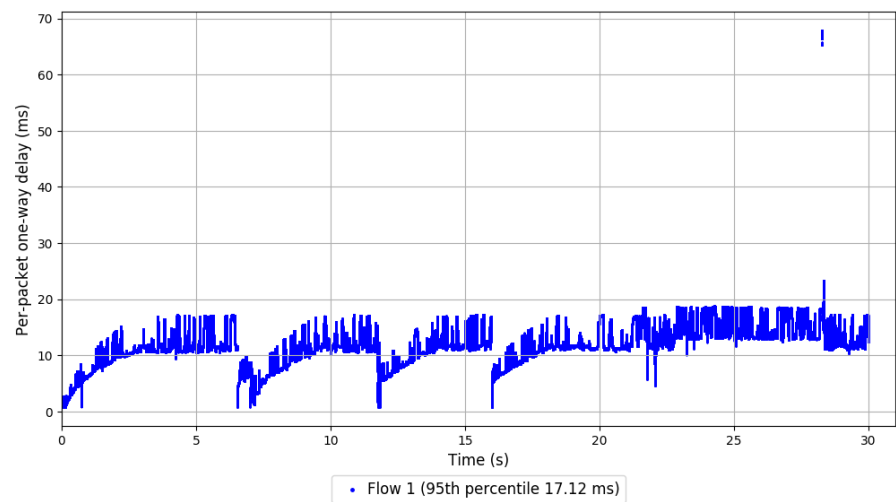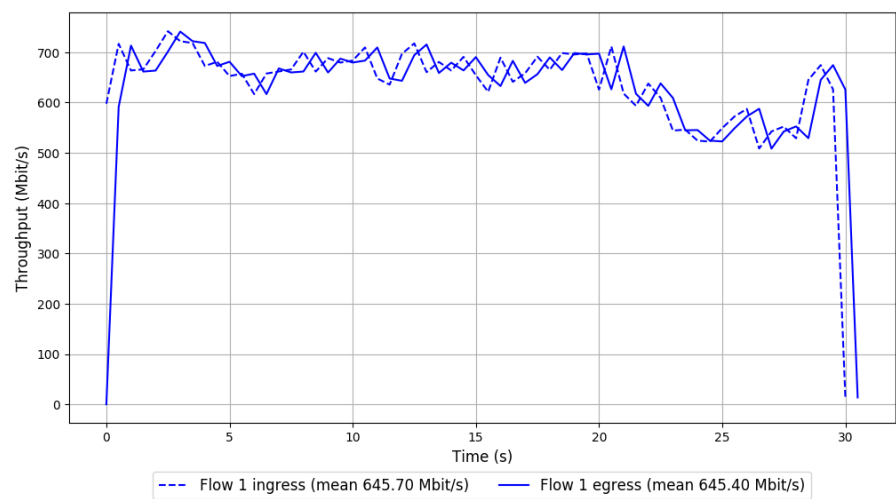
# Run 5: Report of LEDBAT — Data Link



Flow 1 ingress (mean 645.70 Mbit/s) — Flow 1 egress (mean 645.40 Mbit/s)



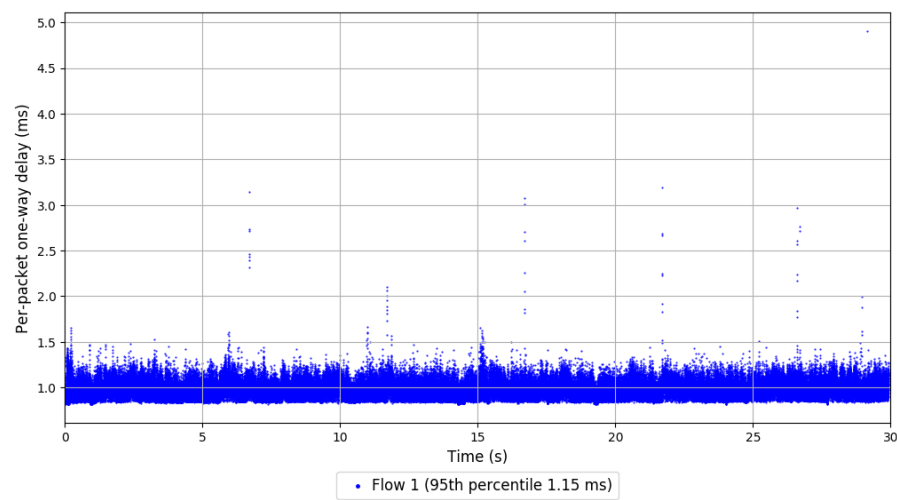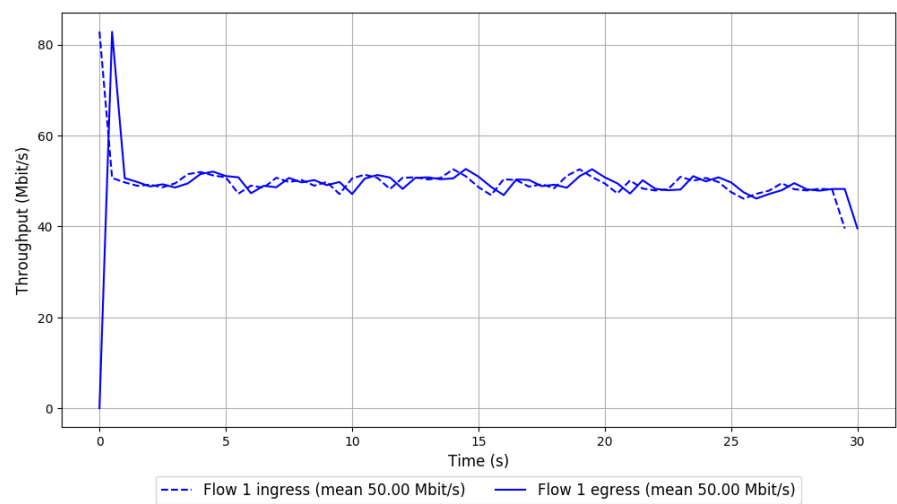• Flow 1 (95th percentile 17.12 ms)

```
Run 1: Statistics of Indigo-Muses

Start at: 2018-10-25 23:57:35
End at: 2018-10-25 23:58:05
Local clock offset: 0.185 ms
Remote clock offset: 0.295 ms


# Below is generated by plot.py at 2018-10-26 02:15:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 50.00 Mbit/s
95th percentile per-packet one-way delay: 1.146 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 50.00 Mbit/s
95th percentile per-packet one-way delay: 1.146 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo-Muses — Data Link

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-10-26 00:23:27
End at: 2018-10-26 00:23:57
Local clock offset: 0.327 ms
Remote clock offset: 0.3 ms

# Below is generated by plot.py at 2018-10-26 02:15:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 51.64 Mbit/s
95th percentile per-packet one-way delay: 1.040 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 51.64 Mbit/s
95th percentile per-packet one-way delay: 1.040 ms
Loss rate: 0.00%
```
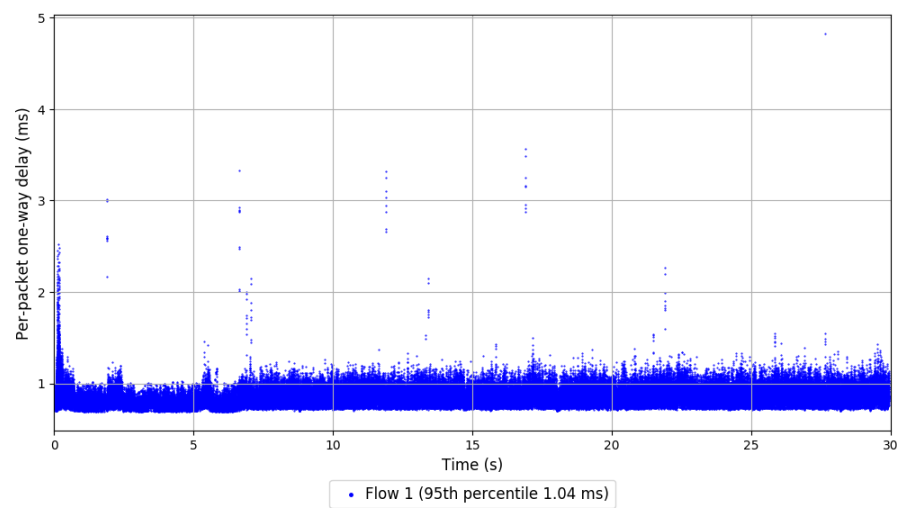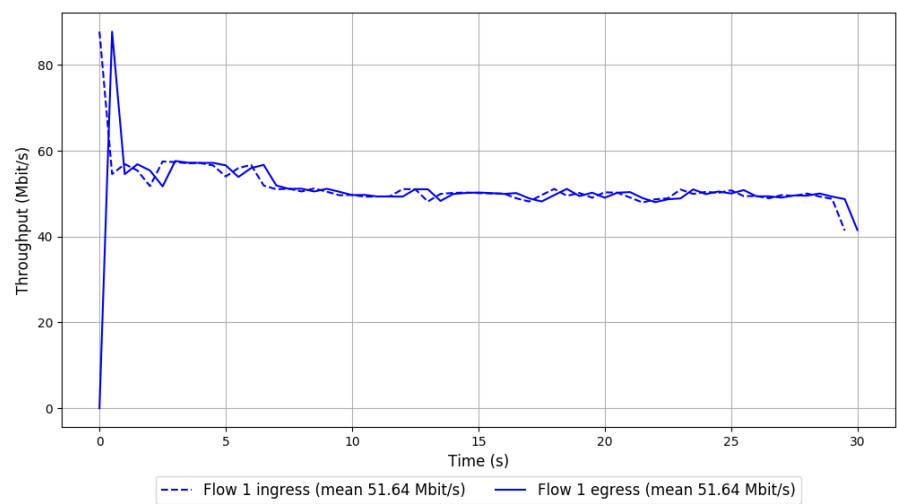
Run 2: Report of Indigo-Muses — Data Link



Flow 1 ingress (mean 51.64 Mbit/s)    Flow 1 egress (mean 51.64 Mbit/s)



• Flow 1 (95th percentile 1.04 ms)

```
Run 3: Statistics of Indigo-Muses

Start at: 2018-10-26 00:49:35
End at: 2018-10-26 00:50:05
Local clock offset: 0.267 ms
Remote clock offset: 3.848 ms

# Below is generated by plot.py at 2018-10-26 02:15:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 51.87 Mbit/s
95th percentile per-packet one-way delay: 1.076 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 51.87 Mbit/s
95th percentile per-packet one-way delay: 1.076 ms
Loss rate: 0.00%
```
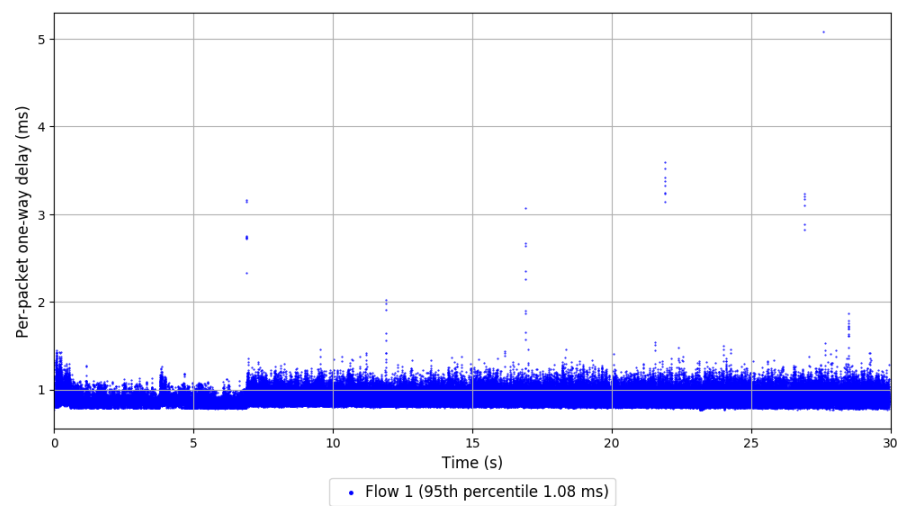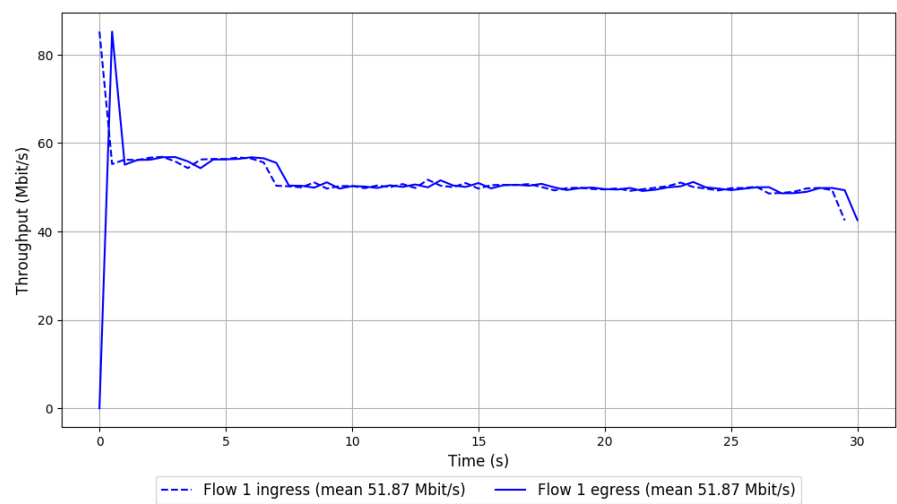
Run 3: Report of Indigo-Muses — Data Link

```
Run 4: Statistics of Indigo-Muses

Start at: 2018-10-26 01:15:32
End at: 2018-10-26 01:16:02
Local clock offset: 0.191 ms
Remote clock offset: 3.75 ms


# Below is generated by plot.py at 2018-10-26 02:15:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 51.51 Mbit/s
95th percentile per-packet one-way delay: 1.057 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 51.51 Mbit/s
95th percentile per-packet one-way delay: 1.057 ms
Loss rate: 0.00%
```
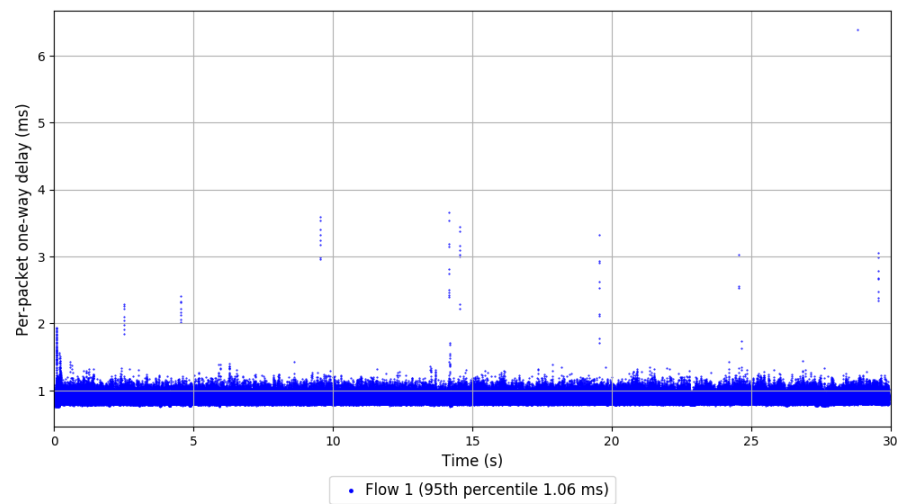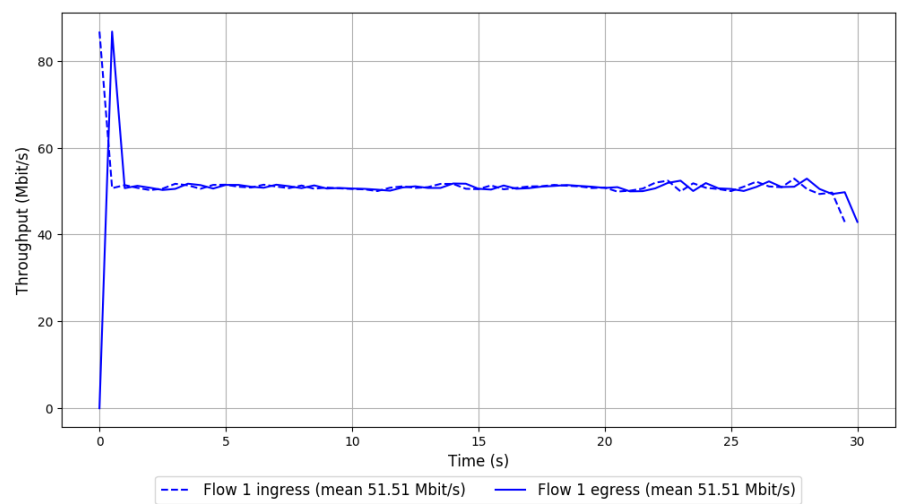
Run 4: Report of Indigo-Muses — Data Link



Flow 1 ingress (mean 51.51 Mbit/s)    Flow 1 egress (mean 51.51 Mbit/s)



• Flow 1 (95th percentile 1.06 ms)

```
Run 5: Statistics of Indigo-Muses

Start at: 2018-10-26 01:41:44
End at: 2018-10-26 01:42:14
Local clock offset: 0.233 ms
Remote clock offset: 3.697 ms

# Below is generated by plot.py at 2018-10-26 02:15:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 59.59 Mbit/s
95th percentile per-packet one-way delay: 1.178 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 59.59 Mbit/s
95th percentile per-packet one-way delay: 1.178 ms
Loss rate: 0.03%
```
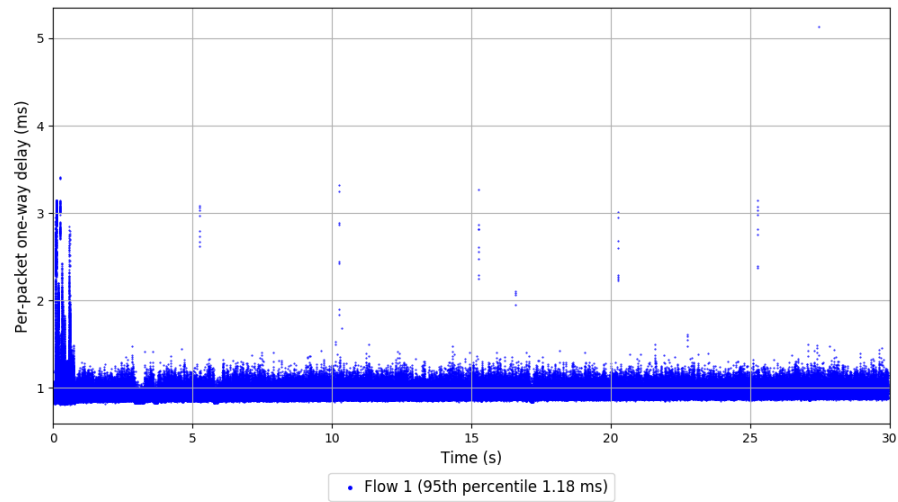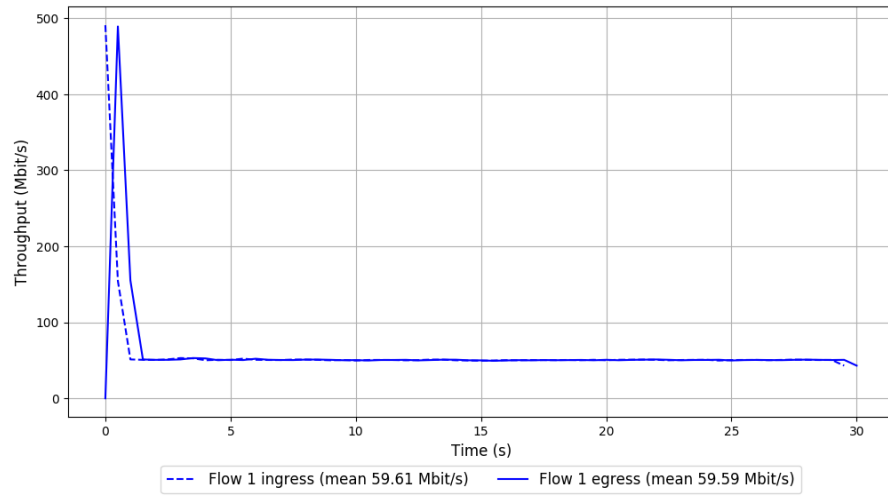
# Run 5: Report of Indigo-Muses — Data Link



Flow 1 ingress (mean 59.61 Mbit/s) — — — Flow 1 egress (mean 59.59 Mbit/s)



• Flow 1 (95th percentile 1.18 ms)

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-10-25 23:45:36
End at: 2018-10-25 23:46:06
Local clock offset: 0.308 ms
Remote clock offset: 0.135 ms


# Below is generated by plot.py at 2018-10-26 02:17:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 682.20 Mbit/s
95th percentile per-packet one-way delay: 1.604 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 682.20 Mbit/s
95th percentile per-packet one-way delay: 1.604 ms
Loss rate: 0.00%
```
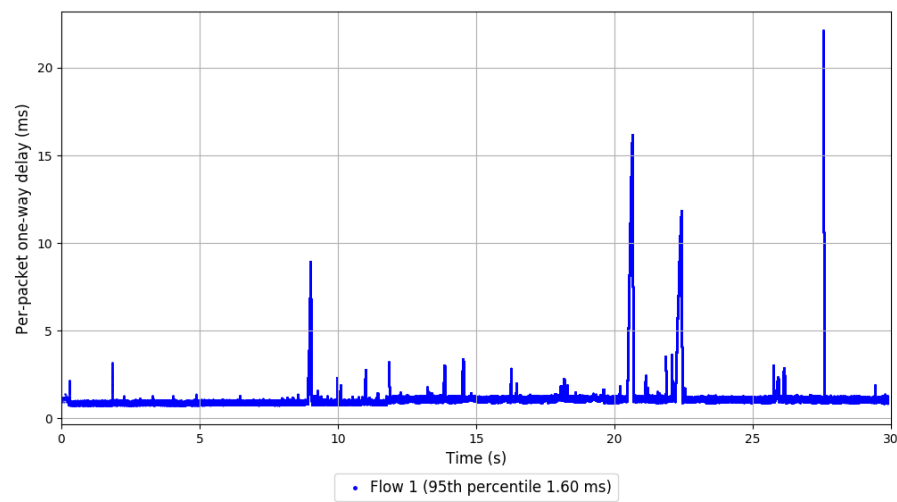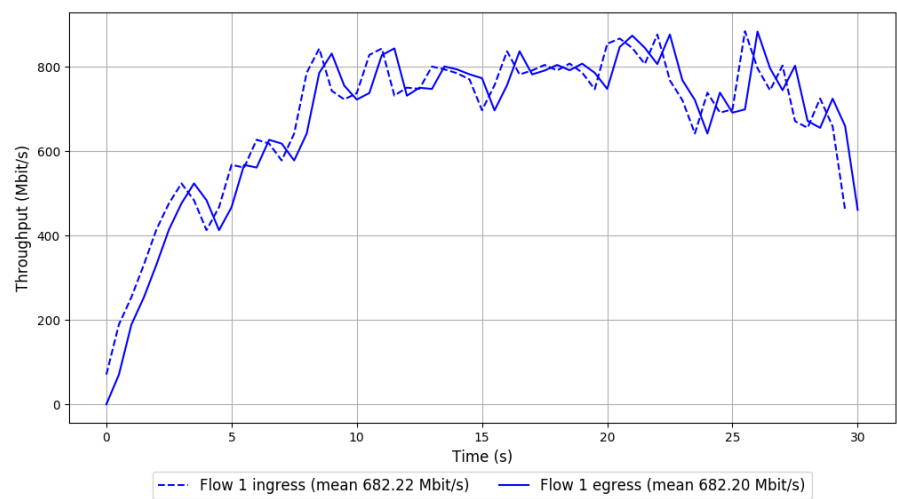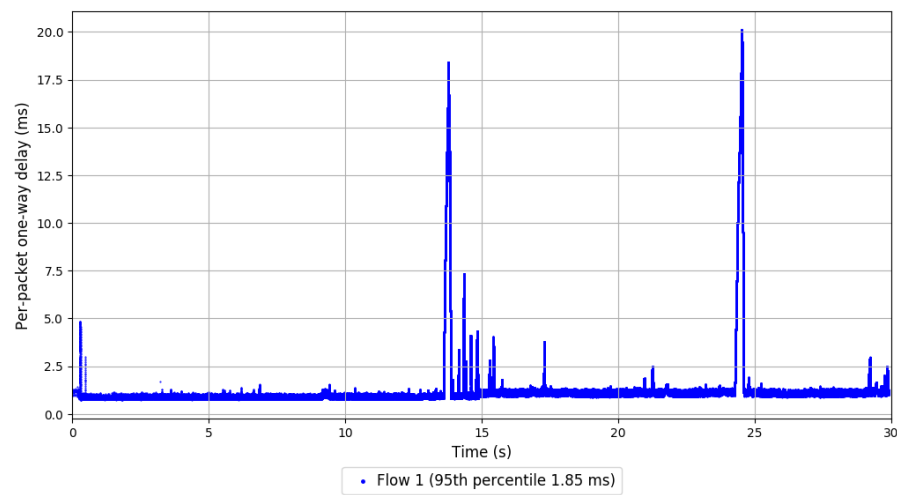
# Run 1: Report of PCC-Allegro — Data Link



Flow 1 ingress (mean 682.22 Mbit/s)    Flow 1 egress (mean 682.20 Mbit/s)



Flow 1 (95th percentile 1.60 ms)

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-10-26 00:11:26
End at: 2018-10-26 00:11:56
Local clock offset: 0.237 ms
Remote clock offset: 0.244 ms


# Below is generated by plot.py at 2018-10-26 02:17:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 574.07 Mbit/s
95th percentile per-packet one-way delay: 1.846 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 574.07 Mbit/s
95th percentile per-packet one-way delay: 1.846 ms
Loss rate: 0.00%
```
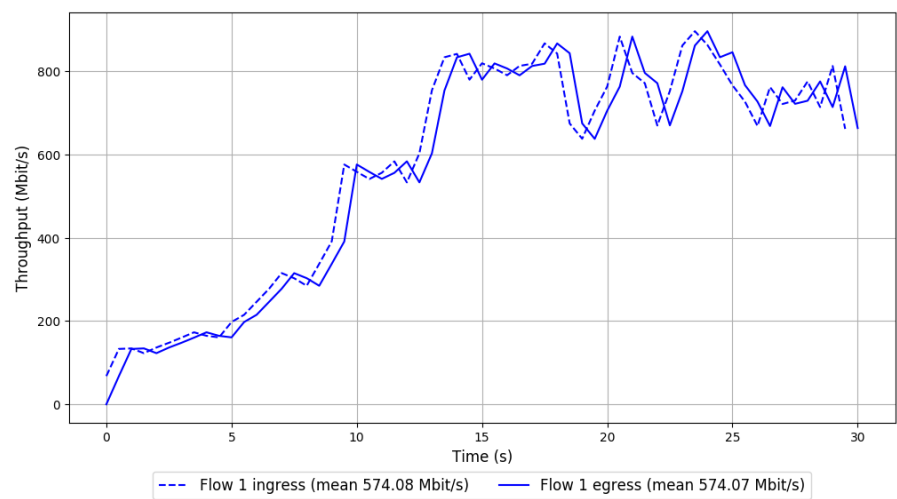
Run 2: Report of PCC-Allegro — Data Link

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-10-26 00:37:29
End at: 2018-10-26 00:37:59
Local clock offset: 0.309 ms
Remote clock offset: 2.498 ms


# Below is generated by plot.py at 2018-10-26 02:18:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 704.81 Mbit/s
95th percentile per-packet one-way delay: 3.981 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 704.81 Mbit/s
95th percentile per-packet one-way delay: 3.981 ms
Loss rate: 0.02%
```
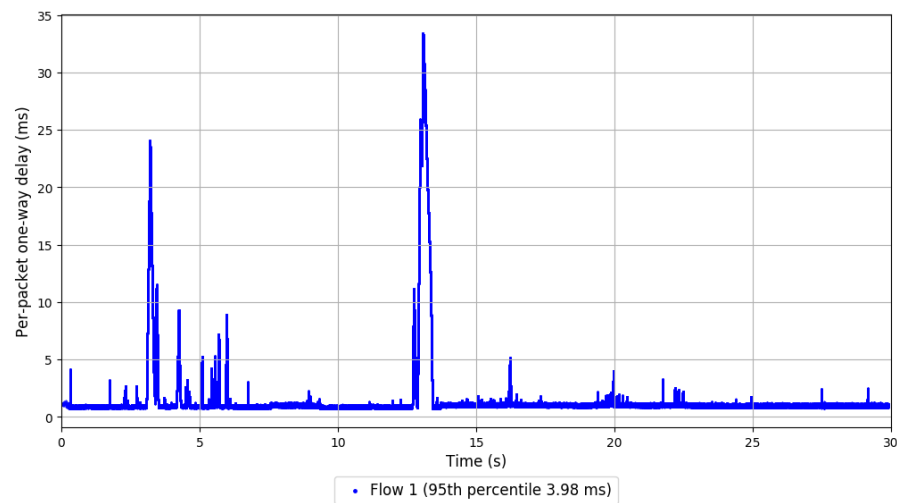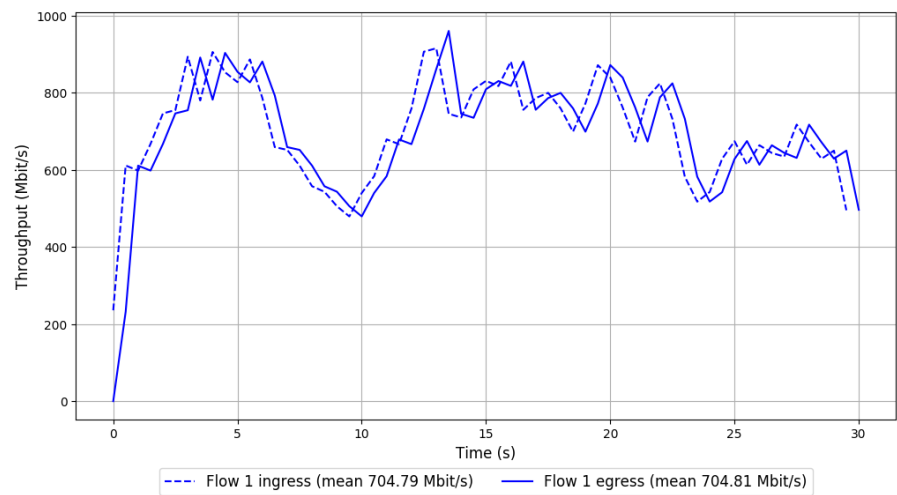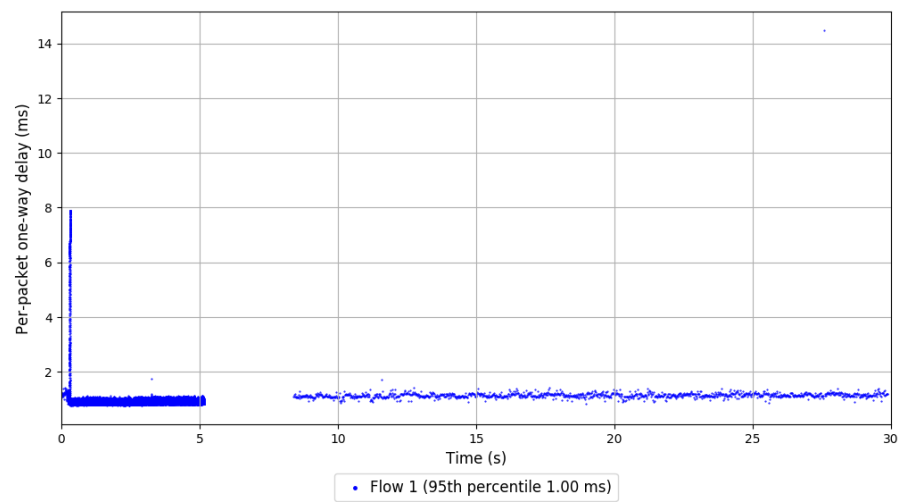
Run 3: Report of PCC-Allegro — Data Link



Flow 1 ingress (mean 704.79 Mbit/s) ----- Flow 1 egress (mean 704.81 Mbit/s)



Flow 1 (95th percentile 3.98 ms)

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-10-26 01:03:40
End at: 2018-10-26 01:04:10
Local clock offset: 0.257 ms
Remote clock offset: 4.541 ms


# Below is generated by plot.py at 2018-10-26 02:18:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 37.45 Mbit/s
95th percentile per-packet one-way delay: 1.002 ms
Loss rate: 51.30%
-- Flow 1:
Average throughput: 37.45 Mbit/s
95th percentile per-packet one-way delay: 1.002 ms
Loss rate: 51.30%
```
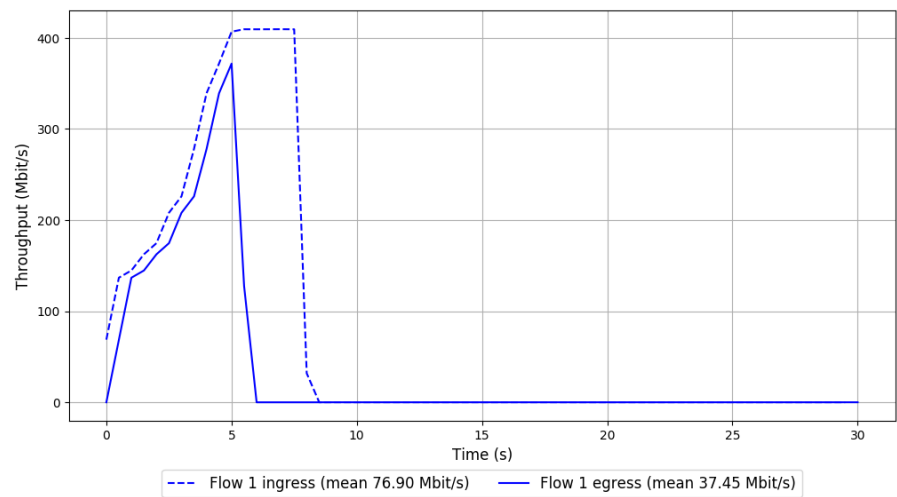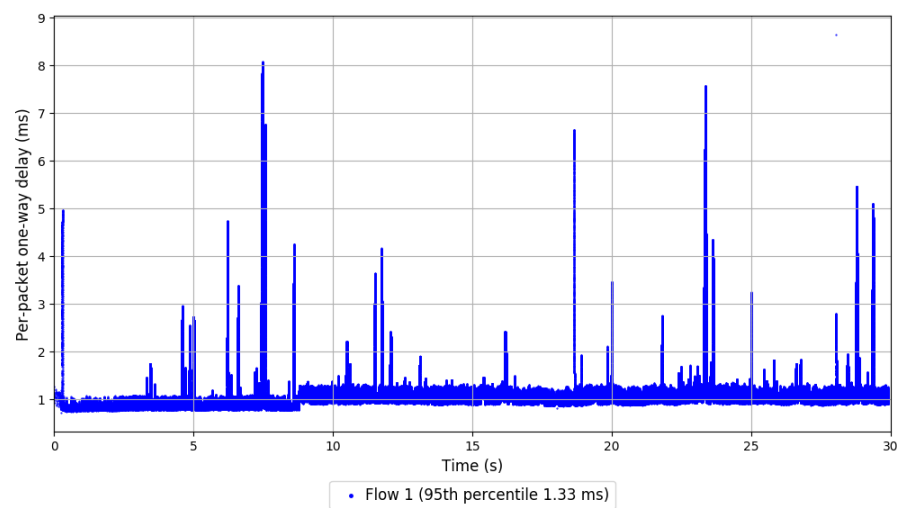
Run 4: Report of PCC-Allegro — Data Link



Flow 1 ingress (mean 76.90 Mbit/s)    Flow 1 egress (mean 37.45 Mbit/s)



Flow 1 (95th percentile 1.00 ms)

```
Run 5: Statistics of PCC-Allegro

Start at: 2018-10-26 01:29:39
End at: 2018-10-26 01:30:09
Local clock offset: 0.139 ms
Remote clock offset: 3.867 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 769.62 Mbit/s
95th percentile per-packet one-way delay: 1.330 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 769.62 Mbit/s
95th percentile per-packet one-way delay: 1.330 ms
Loss rate: 0.02%
```
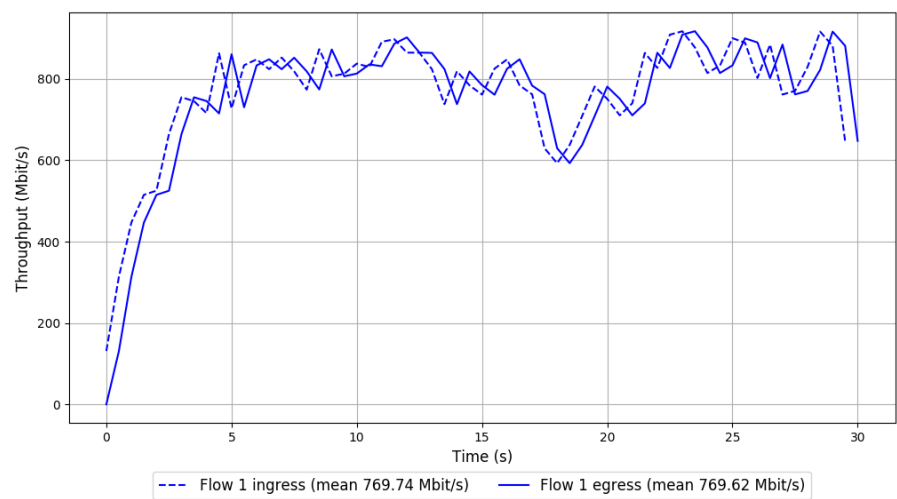
Run 5: Report of PCC-Allegro — Data Link



Flow 1 ingress (mean 769.74 Mbit/s)　　Flow 1 egress (mean 769.62 Mbit/s)

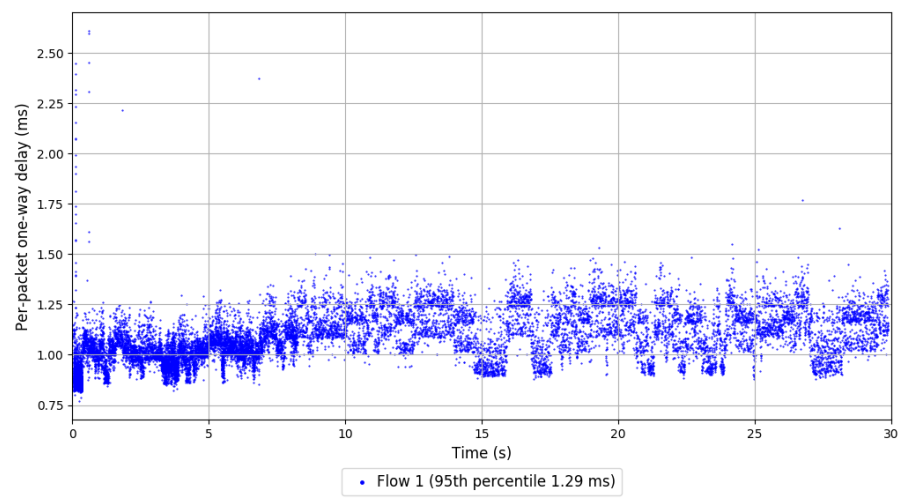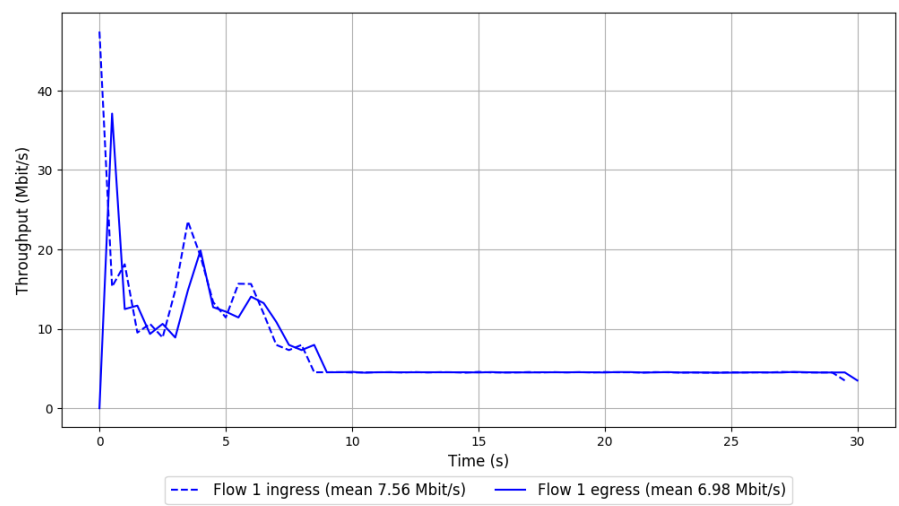

Flow 1 (95th percentile 1.33 ms)

```
Run 1: Statistics of PCC-Expr

Start at: 2018-10-25 23:41:41
End at: 2018-10-25 23:42:11
Local clock offset: 0.134 ms
Remote clock offset: 0.08 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.98 Mbit/s
95th percentile per-packet one-way delay: 1.287 ms
Loss rate: 7.71%
-- Flow 1:
Average throughput: 6.98 Mbit/s
95th percentile per-packet one-way delay: 1.287 ms
Loss rate: 7.71%
```
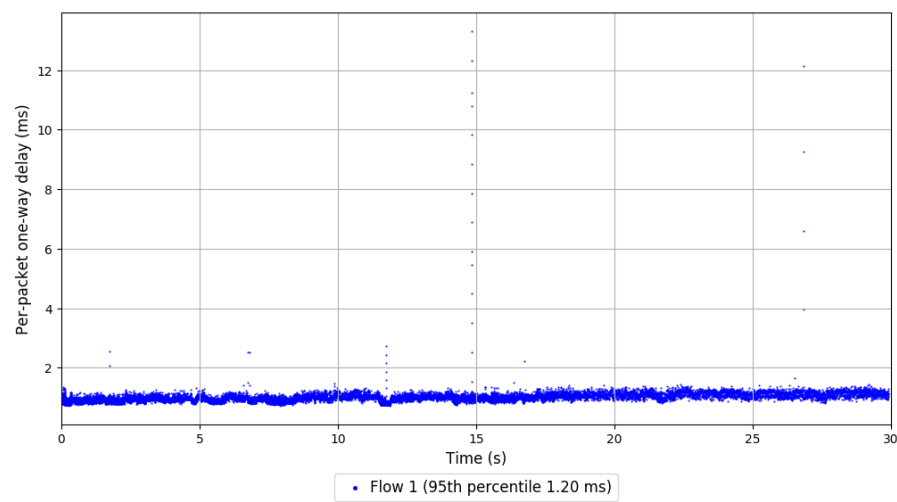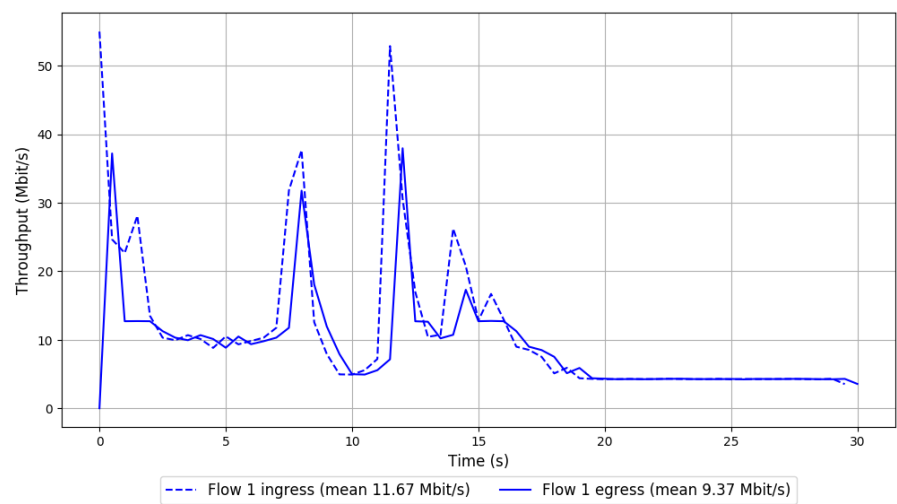
# Run 1: Report of PCC-Expr — Data Link



Flow 1 ingress (mean 7.56 Mbit/s) — — — Flow 1 egress (mean 6.98 Mbit/s)



• Flow 1 (95th percentile 1.29 ms)

```
Run 2: Statistics of PCC-Expr

Start at: 2018-10-26 00:07:32
End at: 2018-10-26 00:08:02
Local clock offset: 0.248 ms
Remote clock offset: 0.217 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.37 Mbit/s
95th percentile per-packet one-way delay: 1.200 ms
Loss rate: 19.73%
-- Flow 1:
Average throughput: 9.37 Mbit/s
95th percentile per-packet one-way delay: 1.200 ms
Loss rate: 19.73%
```
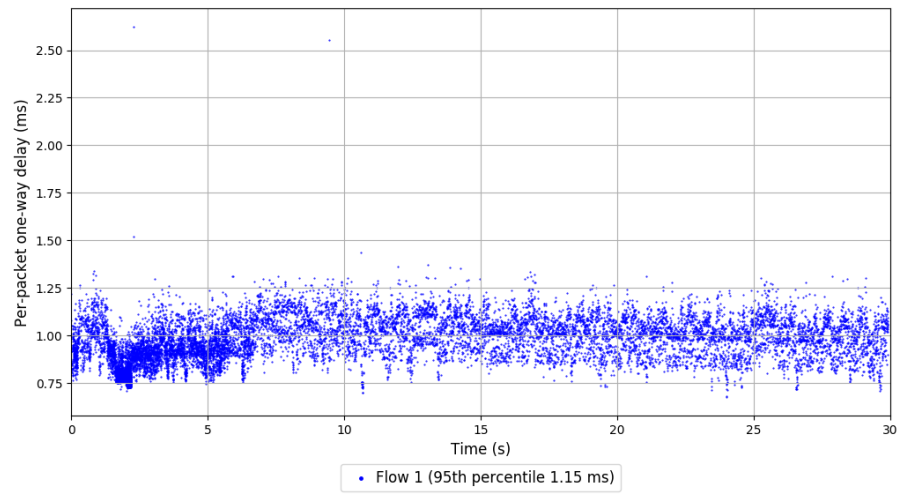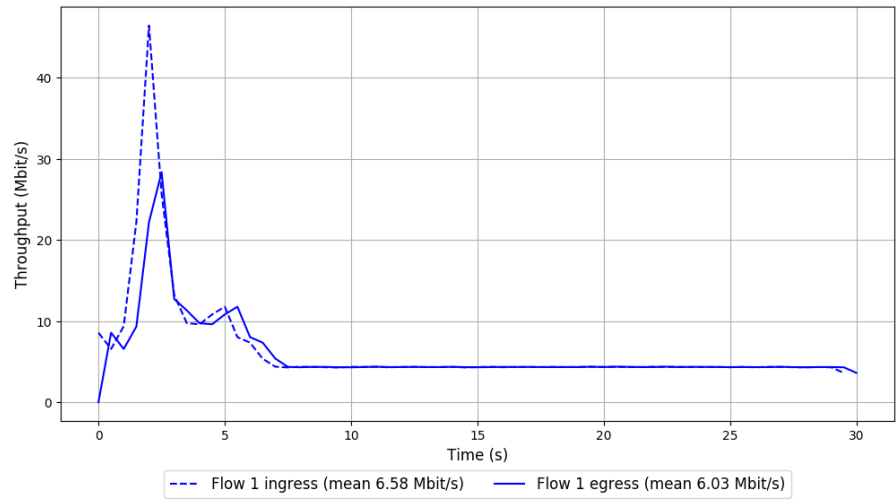
Run 2: Report of PCC-Expr — Data Link

```
Run 3: Statistics of PCC-Expr

Start at: 2018-10-26 00:33:35
End at: 2018-10-26 00:34:05
Local clock offset: 0.386 ms
Remote clock offset: 1.792 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.03 Mbit/s
95th percentile per-packet one-way delay: 1.152 ms
Loss rate: 8.36%
-- Flow 1:
Average throughput: 6.03 Mbit/s
95th percentile per-packet one-way delay: 1.152 ms
Loss rate: 8.36%
```

Run 3: Report of PCC-Expr — Data Link

```
Run 4: Statistics of PCC-Expr

Start at: 2018-10-26 00:59:46
End at: 2018-10-26 01:00:16
Local clock offset: 0.274 ms
Remote clock offset: 4.487 ms

# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.58 Mbit/s
95th percentile per-packet one-way delay: 1.143 ms
Loss rate: 47.99%
-- Flow 1:
Average throughput: 9.58 Mbit/s
95th percentile per-packet one-way delay: 1.143 ms
Loss rate: 47.99%
```
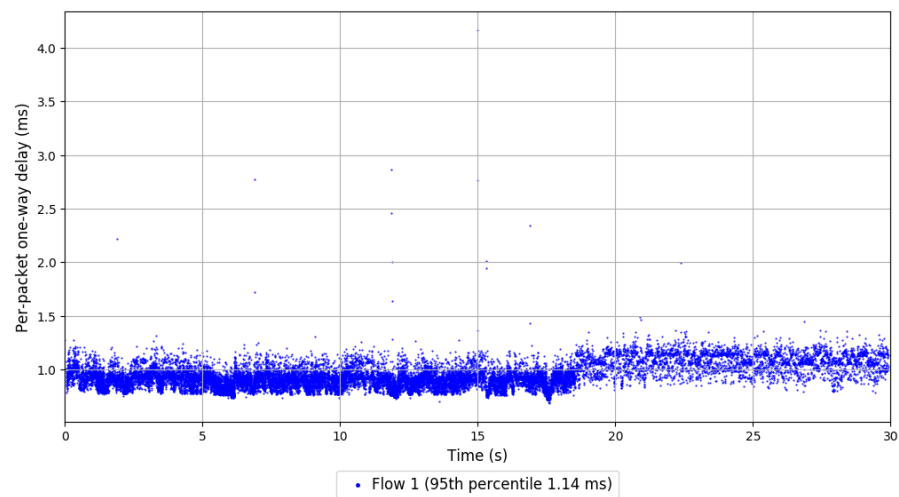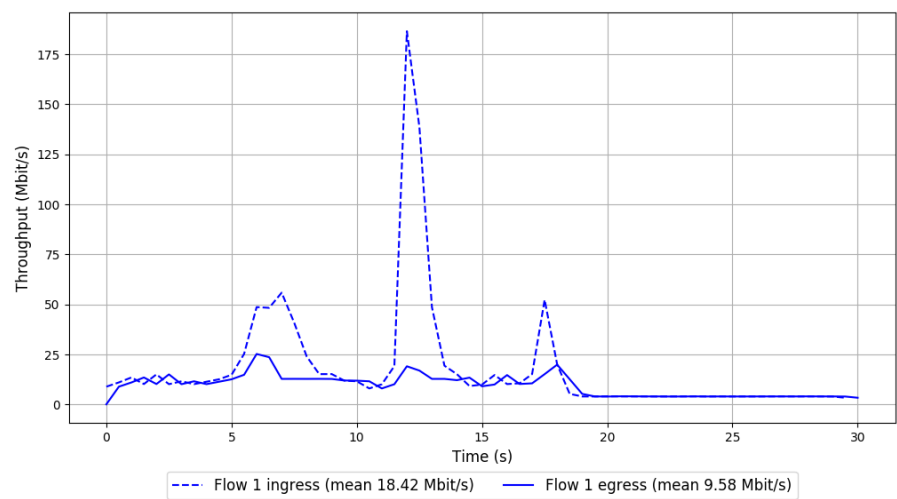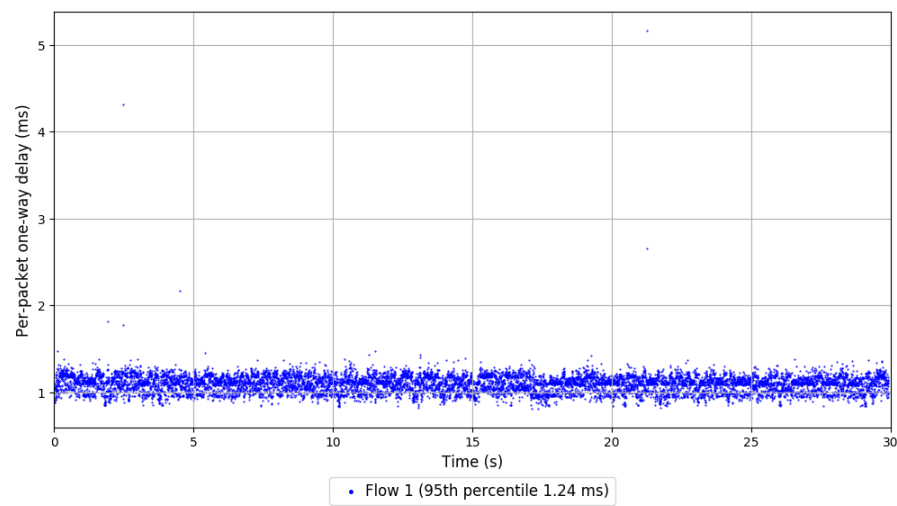
# Run 4: Report of PCC-Expr — Data Link

```
Run 5: Statistics of PCC-Expr

Start at: 2018-10-26 01:25:44
End at: 2018-10-26 01:26:14
Local clock offset: 0.143 ms
Remote clock offset: 3.772 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.28 Mbit/s
95th percentile per-packet one-way delay: 1.238 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 4.28 Mbit/s
95th percentile per-packet one-way delay: 1.238 ms
Loss rate: 0.00%
```
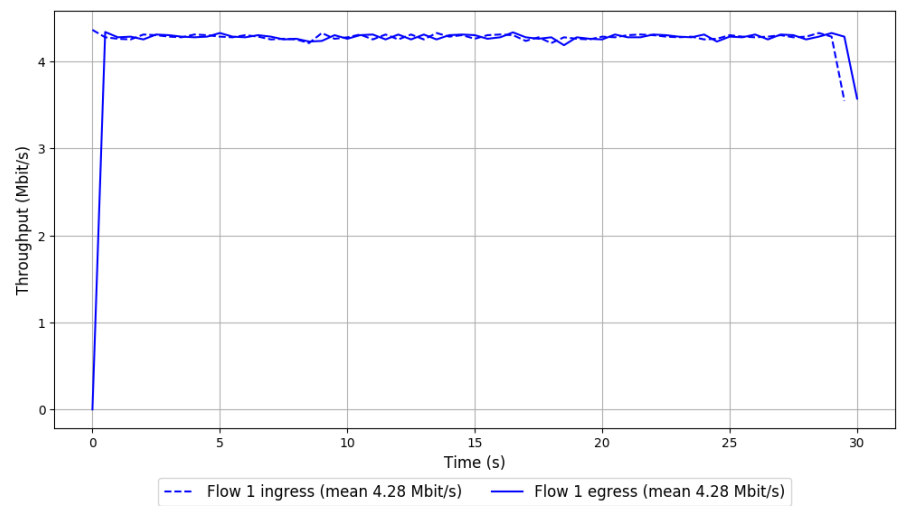
# Run 5: Report of PCC-Expr — Data Link

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-10-25 23:34:36
End at: 2018-10-25 23:35:06
Local clock offset: 0.338 ms
Remote clock offset: -0.056 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 68.91 Mbit/s
95th percentile per-packet one-way delay: 0.544 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 68.91 Mbit/s
95th percentile per-packet one-way delay: 0.544 ms
Loss rate: 0.00%
```
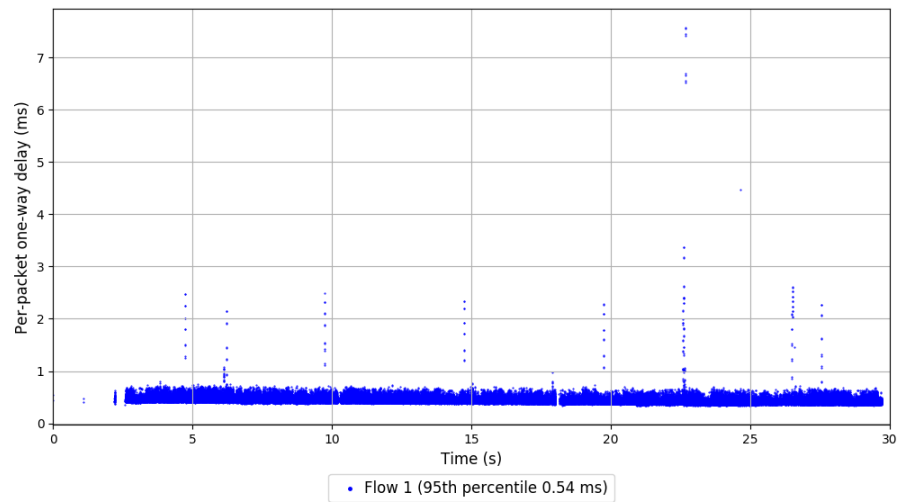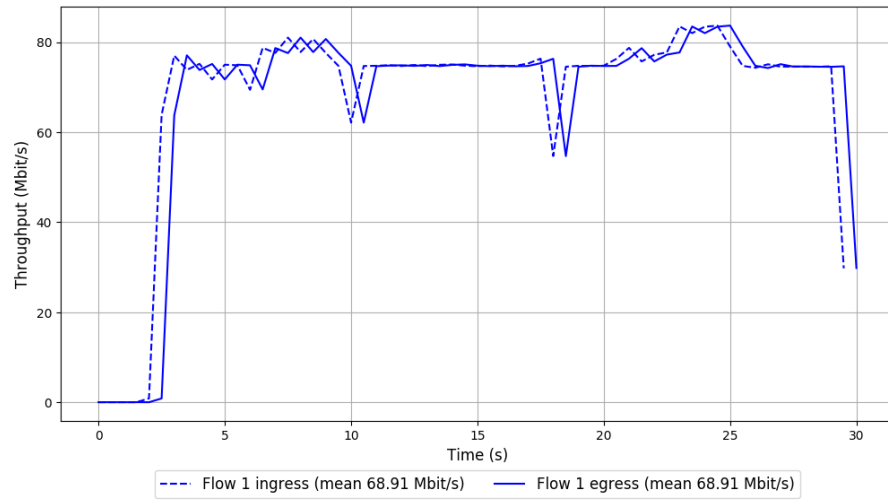
Run 1: Report of QUIC Cubic — Data Link



Flow 1 ingress (mean 68.91 Mbit/s)      Flow 1 egress (mean 68.91 Mbit/s)



Flow 1 (95th percentile 0.54 ms)

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-10-26 00:00:33
End at: 2018-10-26 00:01:03
Local clock offset: 0.199 ms
Remote clock offset: 0.246 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 76.28 Mbit/s
95th percentile per-packet one-way delay: 0.969 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 76.28 Mbit/s
95th percentile per-packet one-way delay: 0.969 ms
Loss rate: 0.00%
```
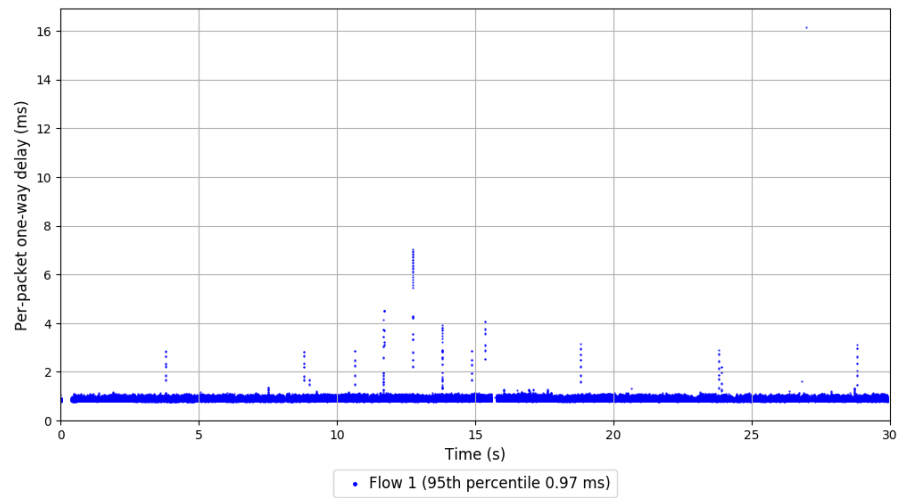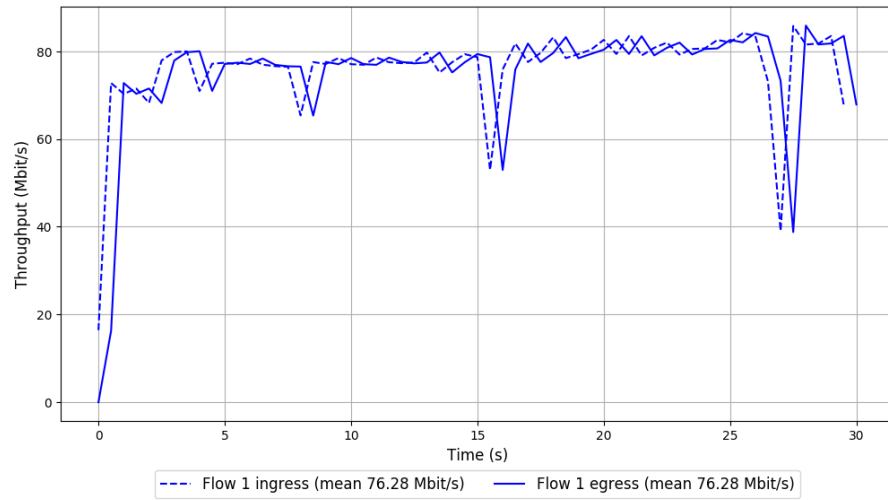
Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-10-26 00:26:27
End at: 2018-10-26 00:26:57
Local clock offset: 0.344 ms
Remote clock offset: 0.375 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 81.95 Mbit/s
95th percentile per-packet one-way delay: 0.910 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 81.95 Mbit/s
95th percentile per-packet one-way delay: 0.910 ms
Loss rate: 0.02%
```
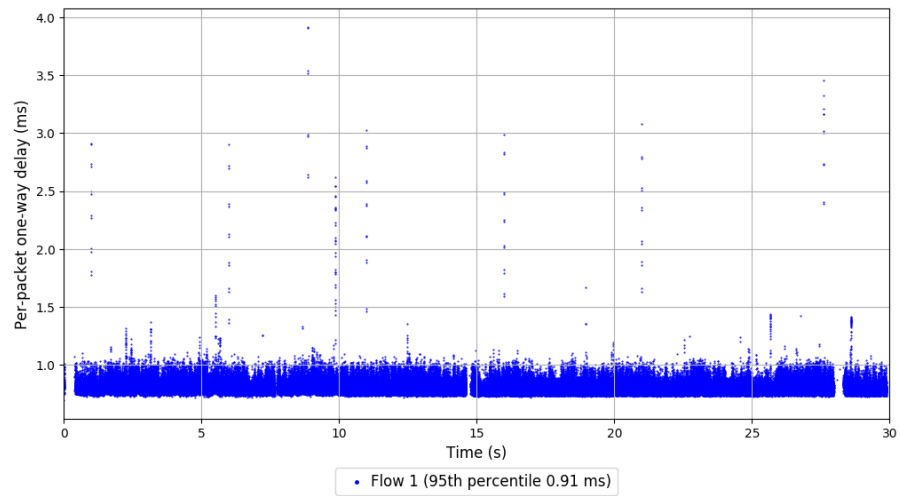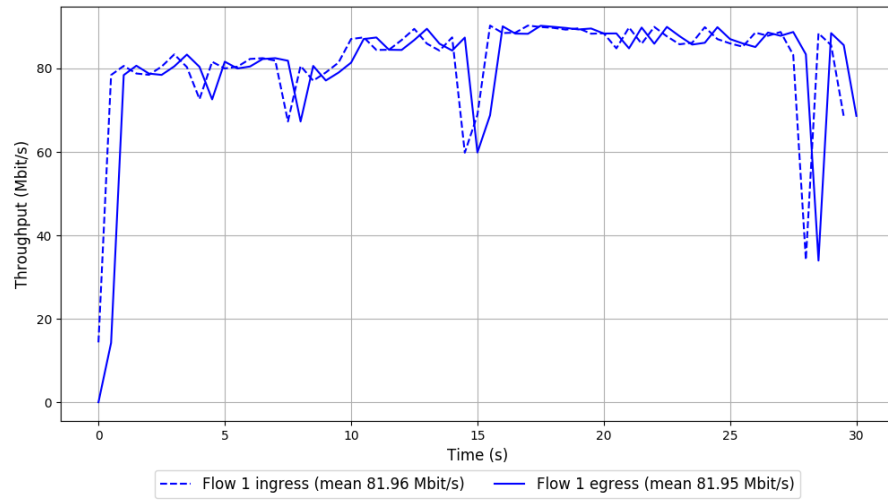
# Run 3: Report of QUIC Cubic — Data Link



Flow 1 ingress (mean 81.96 Mbit/s)   Flow 1 egress (mean 81.95 Mbit/s)



Flow 1 (95th percentile 0.91 ms)

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-10-26 00:52:35
End at: 2018-10-26 00:53:05
Local clock offset: 0.272 ms
Remote clock offset: 4.03 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 79.18 Mbit/s
95th percentile per-packet one-way delay: 0.868 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 79.18 Mbit/s
95th percentile per-packet one-way delay: 0.868 ms
Loss rate: 0.00%
```
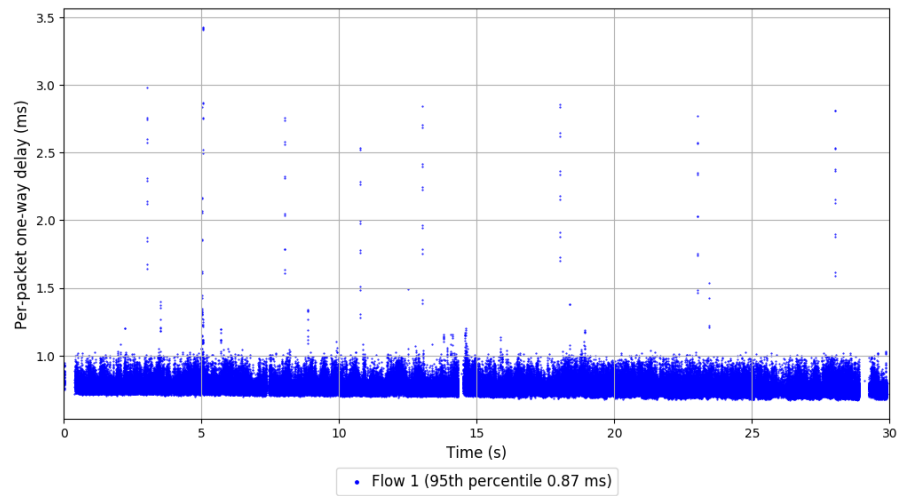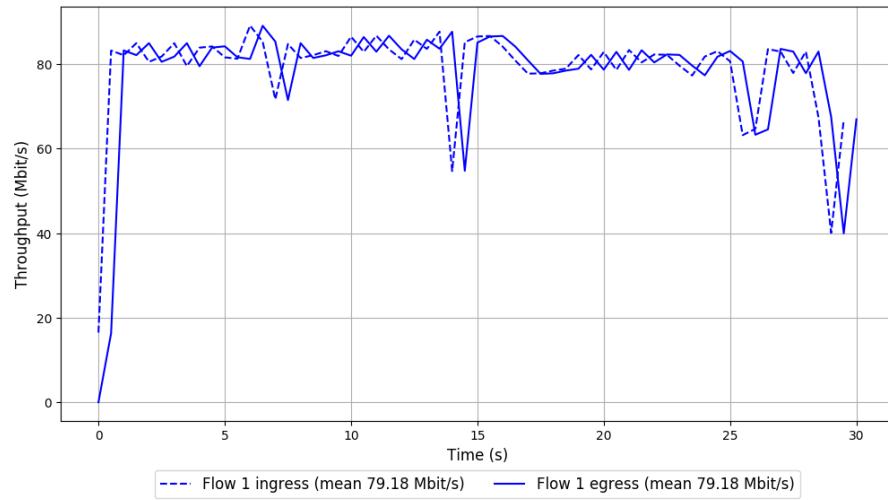
## Run 4: Report of QUIC Cubic — Data Link

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-10-26 01:18:32
End at: 2018-10-26 01:19:02
Local clock offset: 0.181 ms
Remote clock offset: 3.675 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 82.48 Mbit/s
95th percentile per-packet one-way delay: 0.860 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 82.48 Mbit/s
95th percentile per-packet one-way delay: 0.860 ms
Loss rate: 0.00%
```
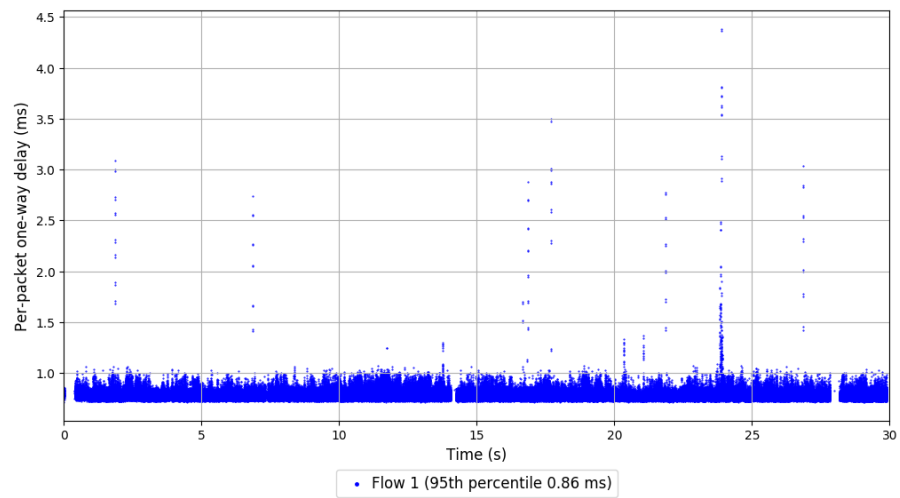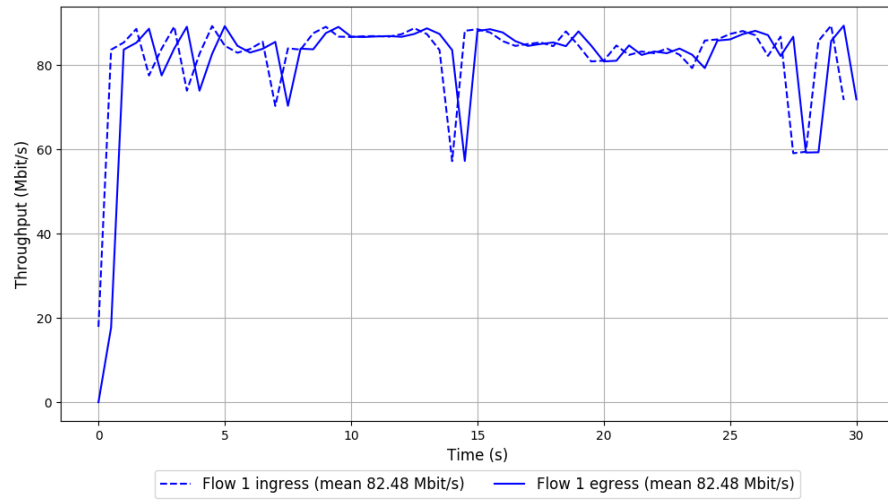
# Run 5: Report of QUIC Cubic — Data Link



Flow 1 ingress (mean 82.48 Mbit/s)    Flow 1 egress (mean 82.48 Mbit/s)



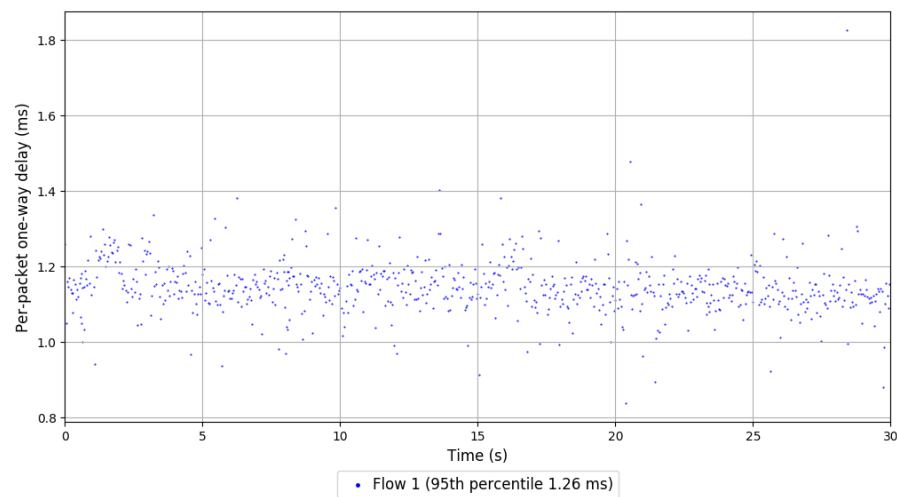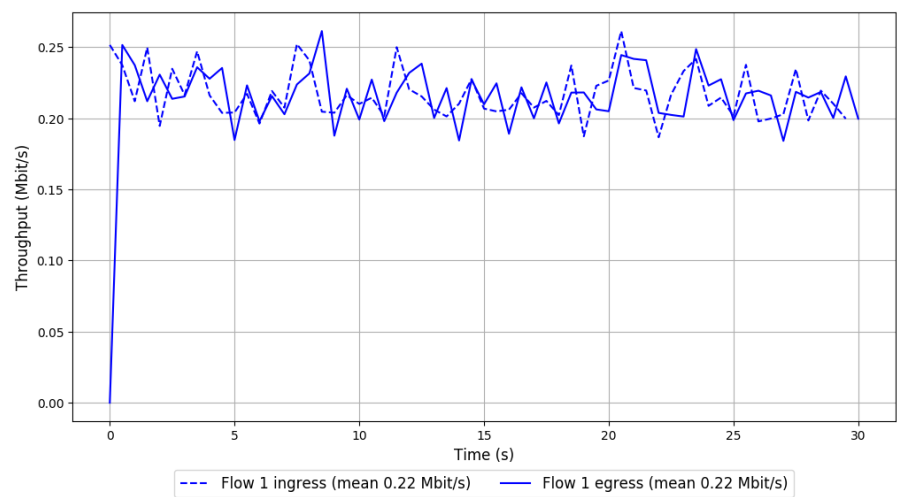Flow 1 (95th percentile 0.86 ms)

```
Run 1: Statistics of SCReAM

Start at: 2018-10-25 23:50:13
End at: 2018-10-25 23:50:43
Local clock offset: 0.307 ms
Remote clock offset: 0.276 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.264 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.264 ms
Loss rate: 0.00%
```

# Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-10-26 00:16:01
End at: 2018-10-26 00:16:31
Local clock offset: 0.275 ms
Remote clock offset: 0.301 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.296 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.296 ms
Loss rate: 0.00%
```
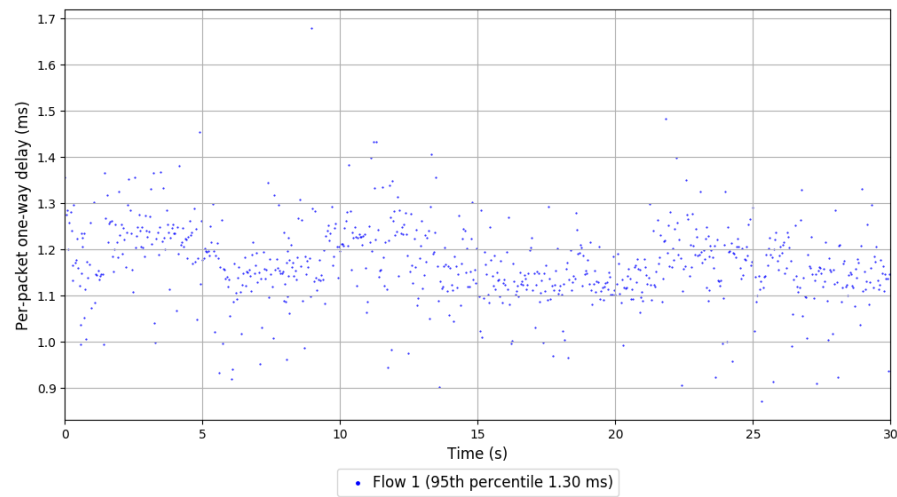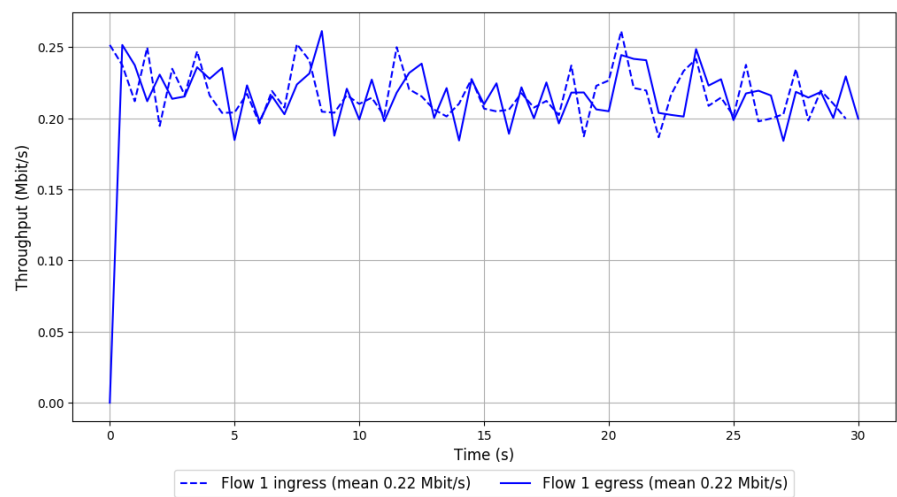
# Run 2: Report of SCReAM — Data Link



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



Flow 1 (95th percentile 1.30 ms)

```
Run 3: Statistics of SCReAM

Start at: 2018-10-26 00:42:07
End at: 2018-10-26 00:42:37
Local clock offset: 0.277 ms
Remote clock offset: 3.107 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.245 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.245 ms
Loss rate: 0.00%
```
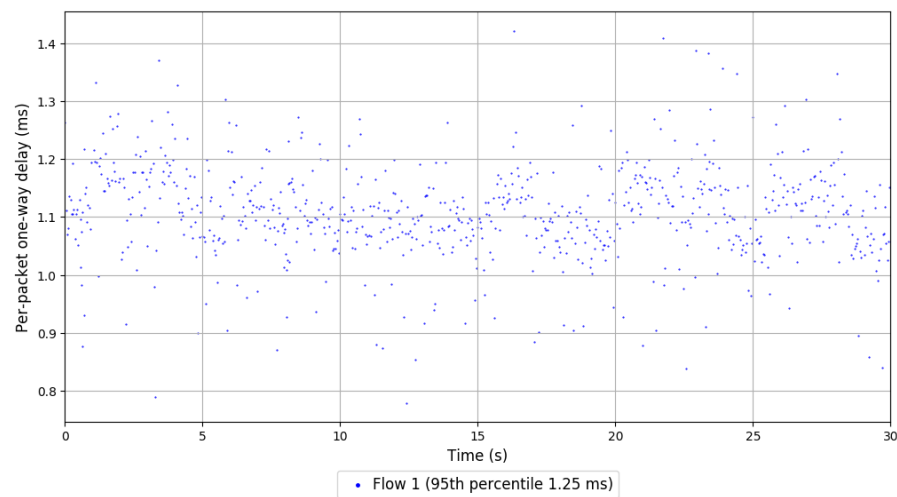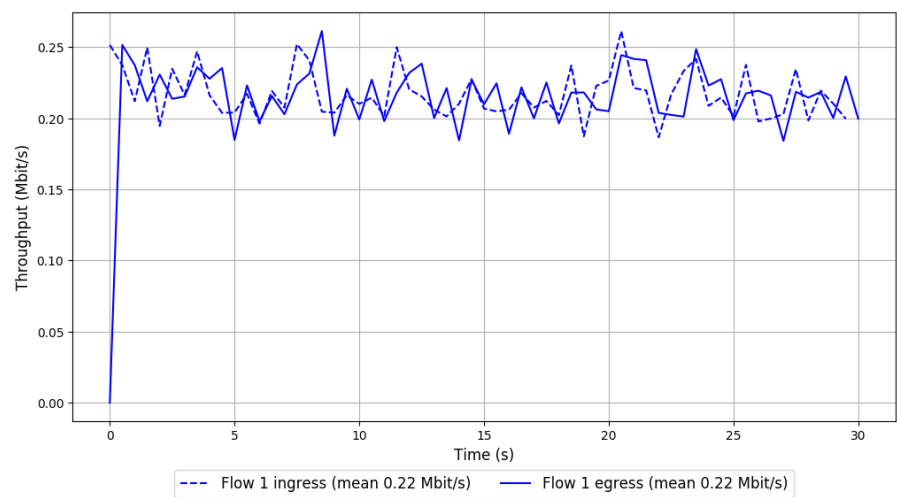
Run 3: Report of SCReAM — Data Link



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



Flow 1 (95th percentile 1.25 ms)

120

```
Run 4: Statistics of SCReAM

Start at: 2018-10-26 01:08:08
End at: 2018-10-26 01:08:38
Local clock offset: 0.218 ms
Remote clock offset: 4.062 ms

# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.358 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.358 ms
Loss rate: 0.00%
```
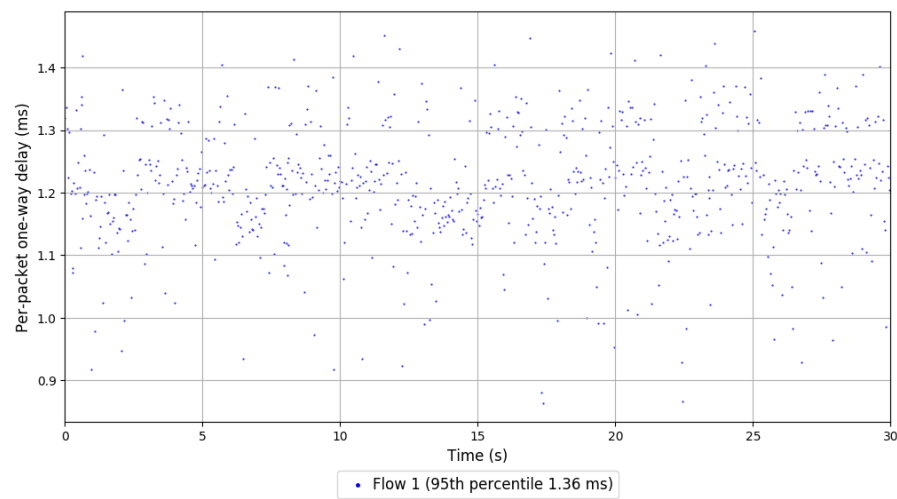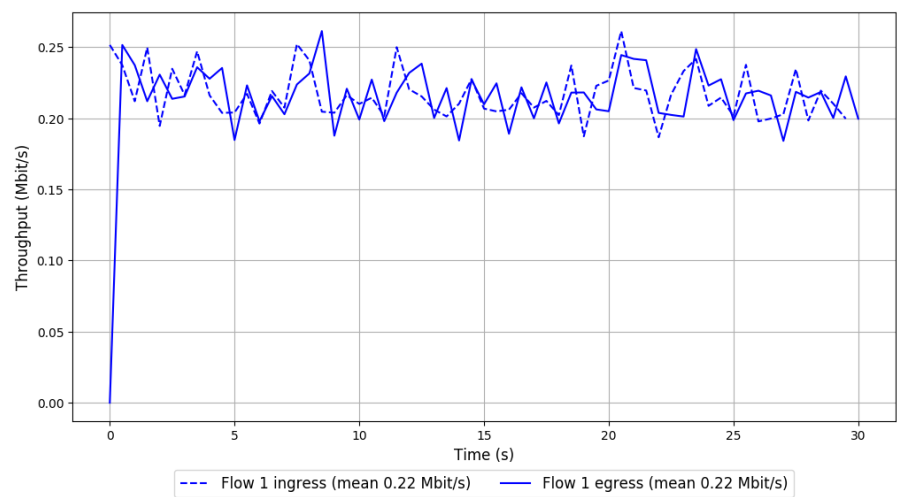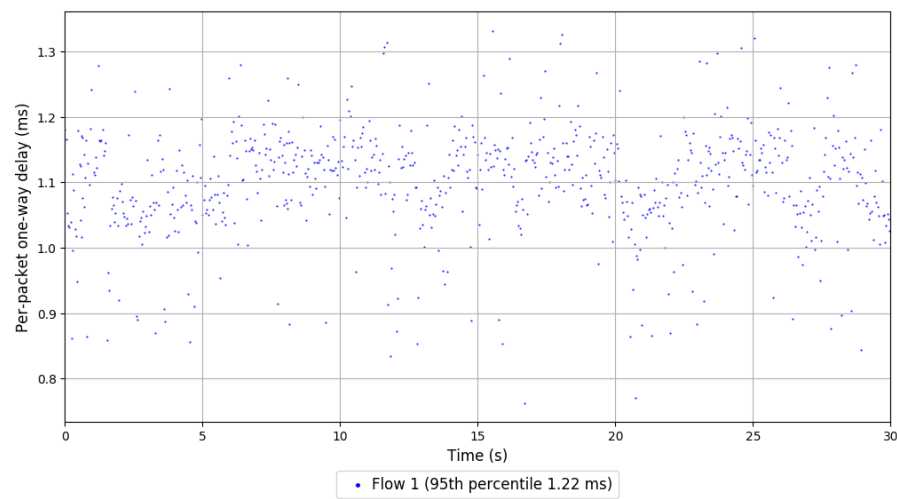
# Run 4: Report of SCReAM — Data Link



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



Flow 1 (95th percentile 1.36 ms)

```
Run 5: Statistics of SCReAM

Start at: 2018-10-26 01:34:19
End at: 2018-10-26 01:34:49
Local clock offset: 0.173 ms
Remote clock offset: 3.96 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.215 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.215 ms
Loss rate: 0.00%
```
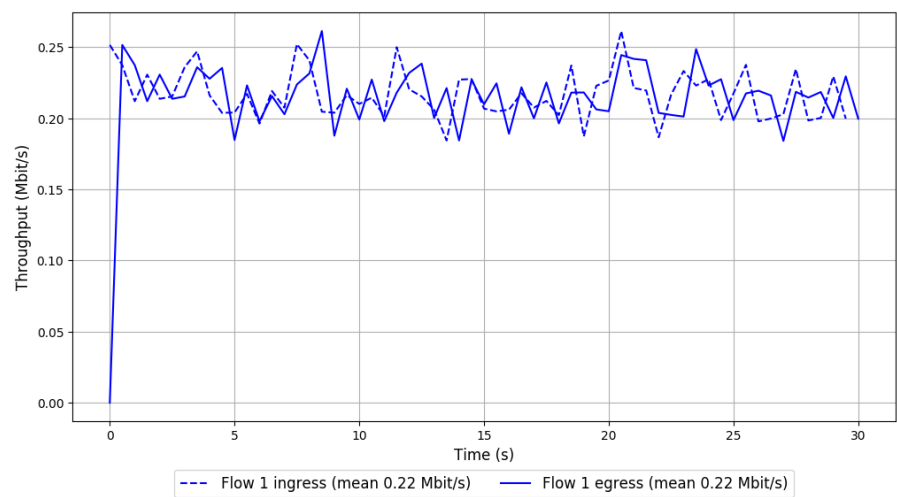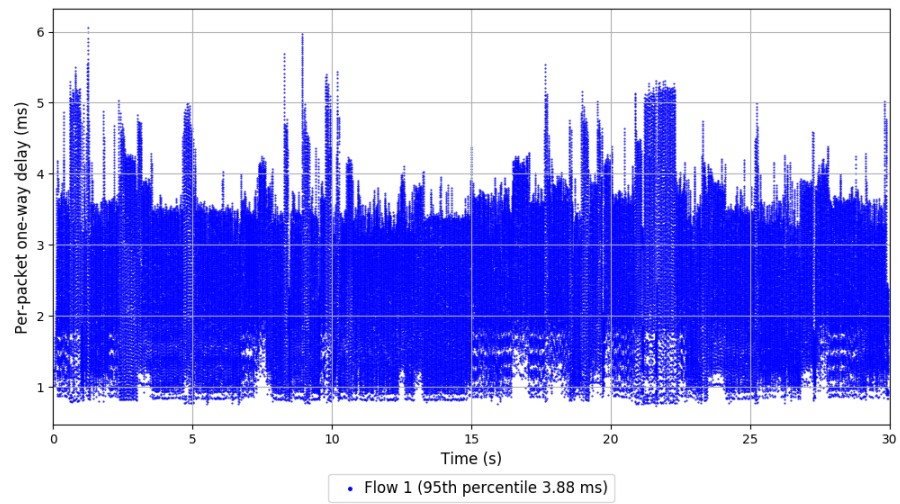
Run 5: Report of SCReAM — Data Link



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



Flow 1 (95th percentile 1.22 ms)

```
Run 1: Statistics of Sprout

Start at: 2018-10-25 23:38:39
End at: 2018-10-25 23:39:09
Local clock offset: 0.024 ms
Remote clock offset: 0.009 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 50.08 Mbit/s
95th percentile per-packet one-way delay: 3.884 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 50.08 Mbit/s
95th percentile per-packet one-way delay: 3.884 ms
Loss rate: 0.00%
```
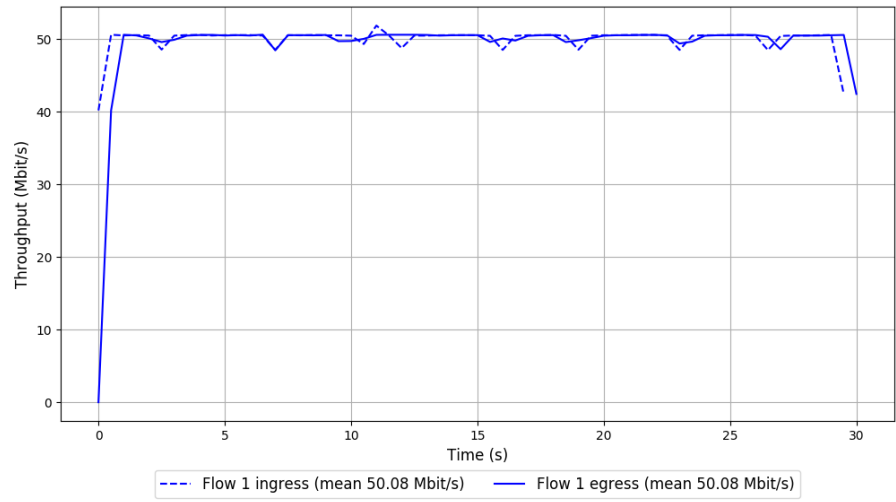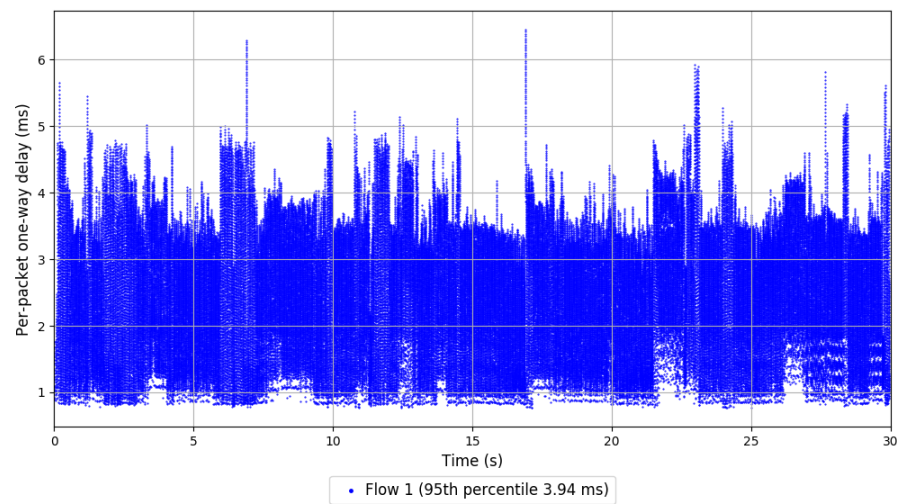
Run 1: Report of Sprout — Data Link



Flow 1 ingress (mean 50.08 Mbit/s) ----- Flow 1 egress (mean 50.08 Mbit/s)



• Flow 1 (95th percentile 3.88 ms)

```
Run 2: Statistics of Sprout

Start at: 2018-10-26 00:04:30
End at: 2018-10-26 00:05:00
Local clock offset: 0.205 ms
Remote clock offset: 0.181 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 50.10 Mbit/s
95th percentile per-packet one-way delay: 3.937 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 50.10 Mbit/s
95th percentile per-packet one-way delay: 3.937 ms
Loss rate: 0.01%
```
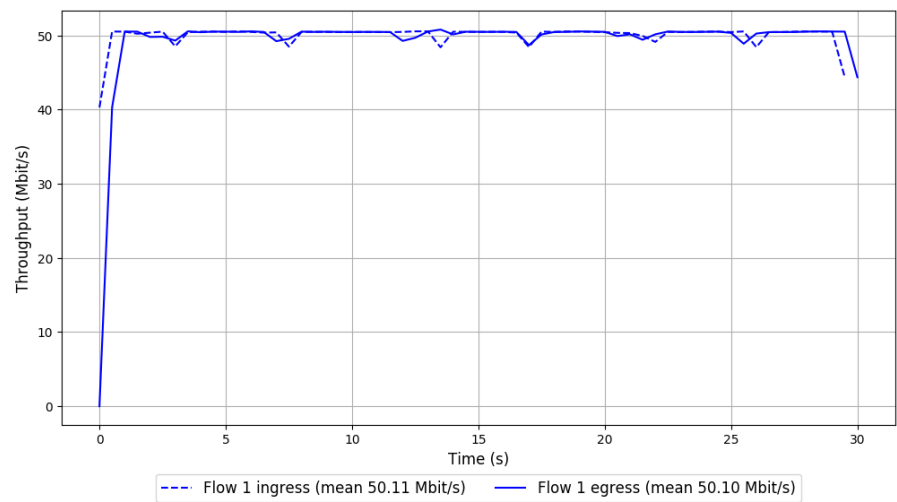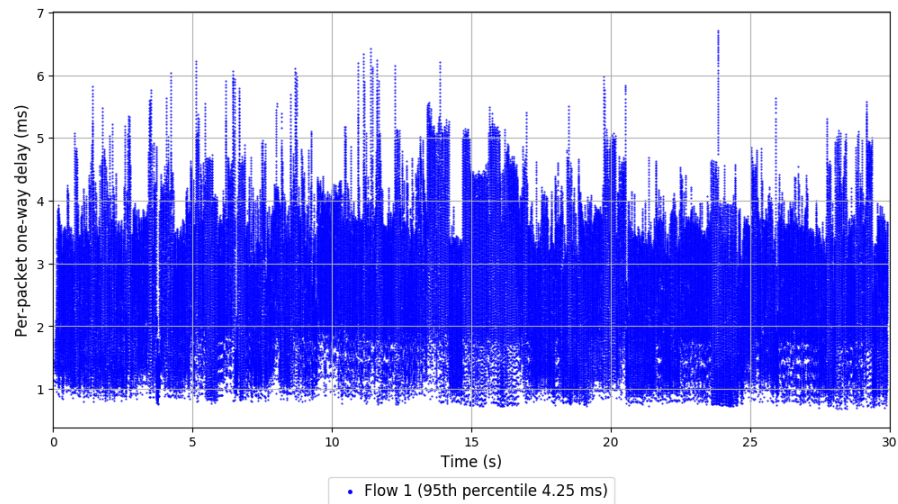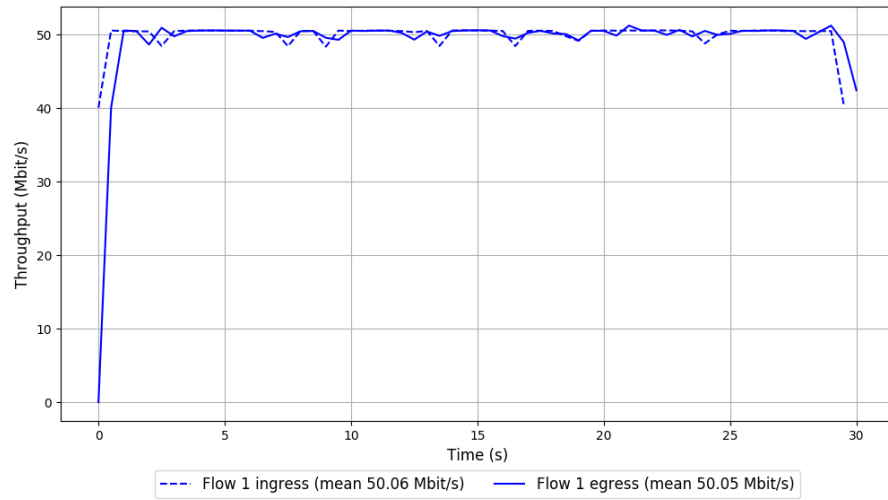
Run 2: Report of Sprout — Data Link



Flow 1 ingress (mean 50.11 Mbit/s)    Flow 1 egress (mean 50.10 Mbit/s)



• Flow 1 (95th percentile 3.94 ms)

```
Run 3: Statistics of Sprout

Start at: 2018-10-26 00:30:34
End at: 2018-10-26 00:31:04
Local clock offset: 0.398 ms
Remote clock offset: 1.069 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 50.05 Mbit/s
95th percentile per-packet one-way delay: 4.251 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 50.05 Mbit/s
95th percentile per-packet one-way delay: 4.251 ms
Loss rate: 0.00%
```
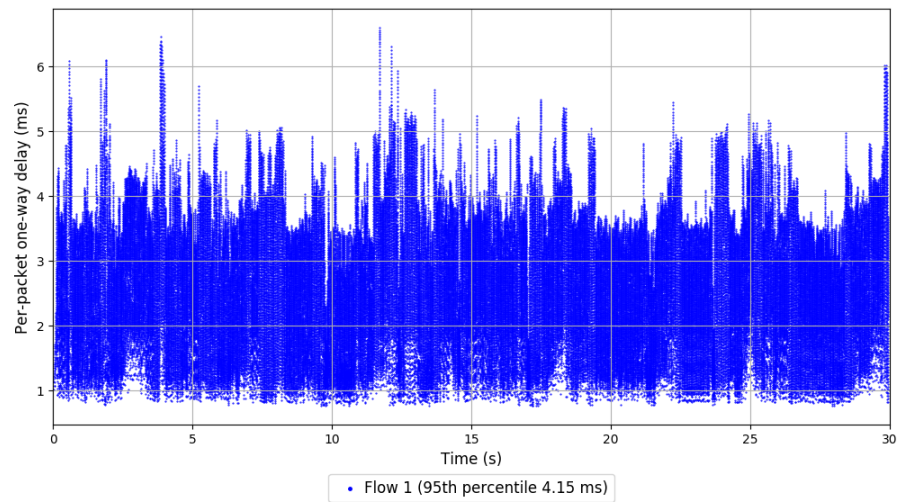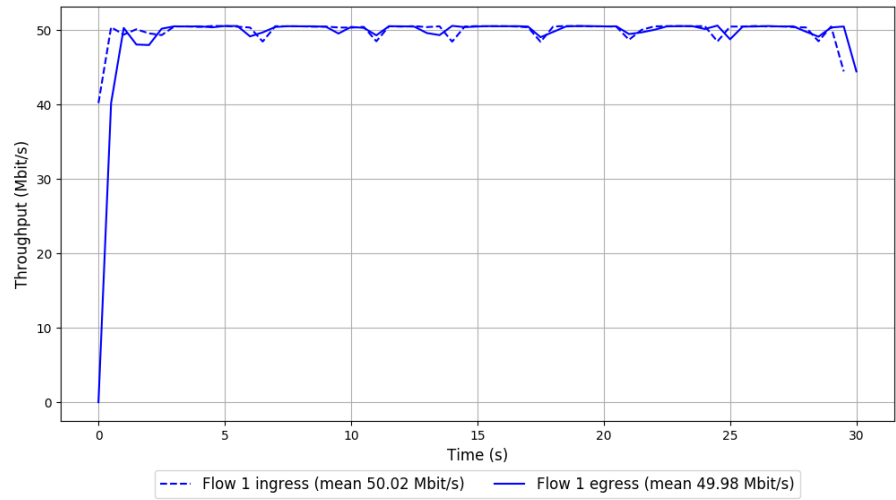
# Run 3: Report of Sprout — Data Link



Flow 1 ingress (mean 50.06 Mbit/s) — Flow 1 egress (mean 50.05 Mbit/s)



• Flow 1 (95th percentile 4.25 ms)

```
Run 4: Statistics of Sprout

Start at: 2018-10-26 00:56:42
End at: 2018-10-26 00:57:12
Local clock offset: 0.272 ms
Remote clock offset: 4.306 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 49.98 Mbit/s
95th percentile per-packet one-way delay: 4.147 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 49.98 Mbit/s
95th percentile per-packet one-way delay: 4.147 ms
Loss rate: 0.06%
```
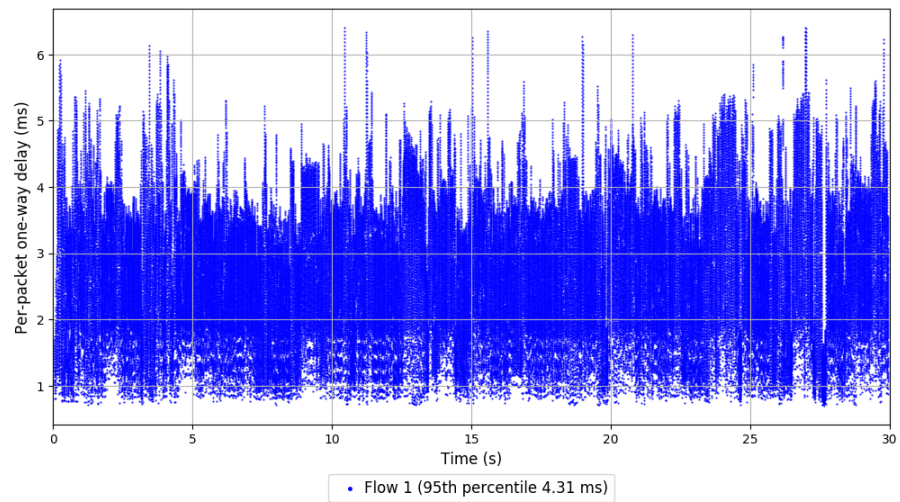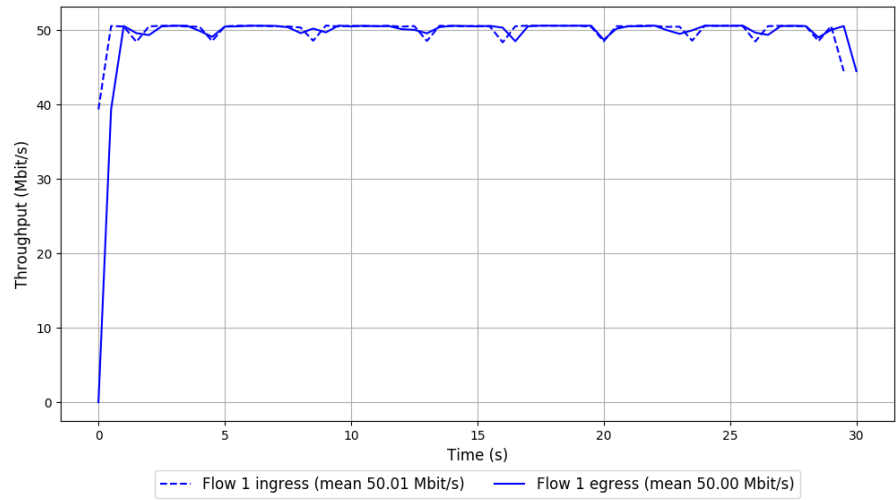
## Run 4: Report of Sprout — Data Link



Flow 1 ingress (mean 50.02 Mbit/s) ----- Flow 1 egress (mean 49.98 Mbit/s)



• Flow 1 (95th percentile 4.15 ms)

```
Run 5: Statistics of Sprout

Start at: 2018-10-26 01:22:40
End at: 2018-10-26 01:23:10
Local clock offset: 0.174 ms
Remote clock offset: 3.665 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 50.00 Mbit/s
95th percentile per-packet one-way delay: 4.309 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 50.00 Mbit/s
95th percentile per-packet one-way delay: 4.309 ms
Loss rate: 0.00%
```

## Run 5: Report of Sprout — Data Link



Flow 1 ingress (mean 50.01 Mbit/s)     Flow 1 egress (mean 50.00 Mbit/s)



Flow 1 (95th percentile 4.31 ms)

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

Start at: 2018-10-25 23:35:56
End at: 2018-10-25 23:36:26
Local clock offset: -0.031 ms
Remote clock offset: -0.018 ms
```
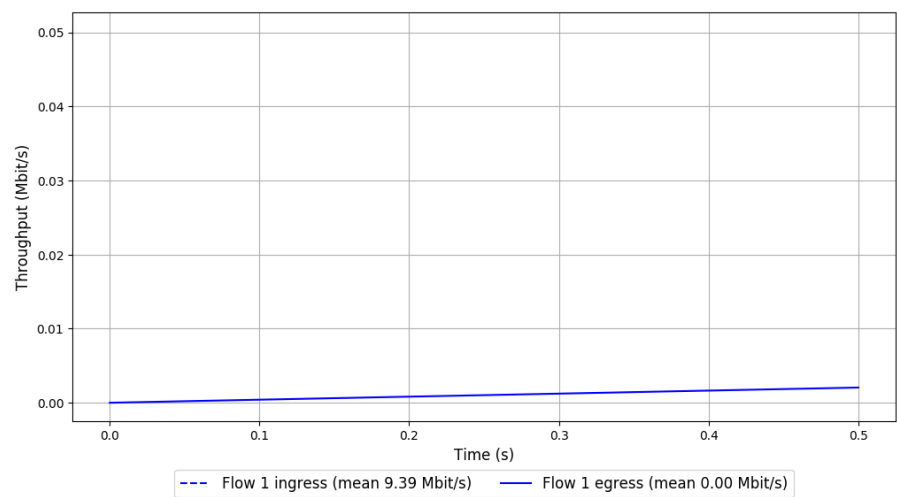
# Run 1: Report of TaoVA-100x — Data Link
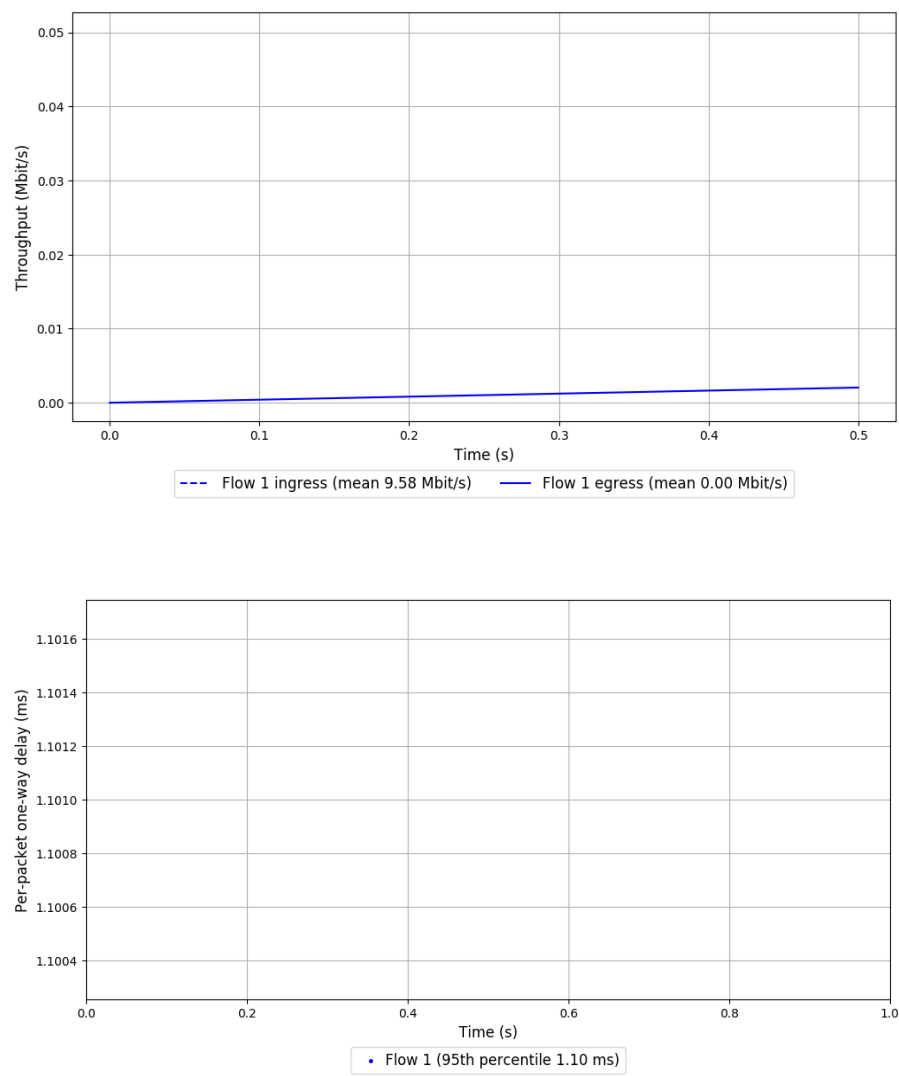
```
Run 2: Statistics of TaoVA-100x

Start at: 2018-10-26 00:01:53
End at: 2018-10-26 00:02:23
Local clock offset: 0.199 ms
Remote clock offset: 0.194 ms
```

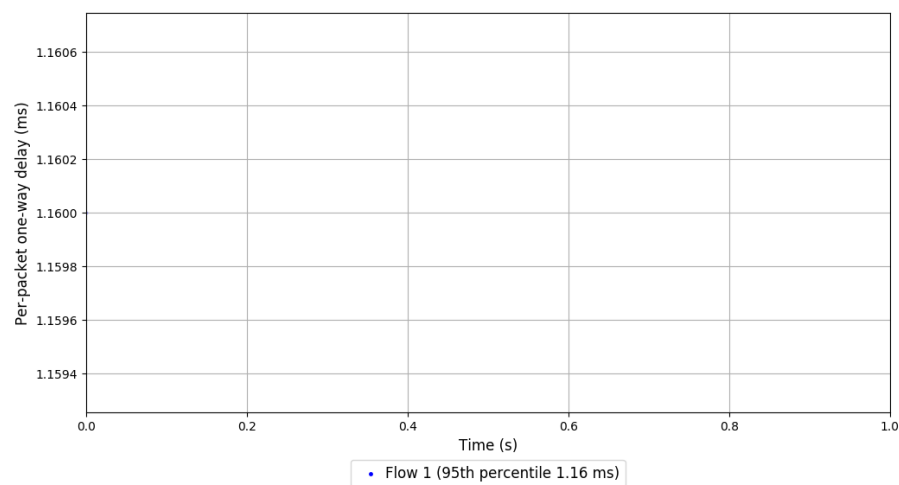Run 2: Report of TaoVA-100x — Data Link

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

Start at: 2018-10-26 00:27:47
End at: 2018-10-26 00:28:17
Local clock offset: 0.377 ms
Remote clock offset: 0.382 ms
```
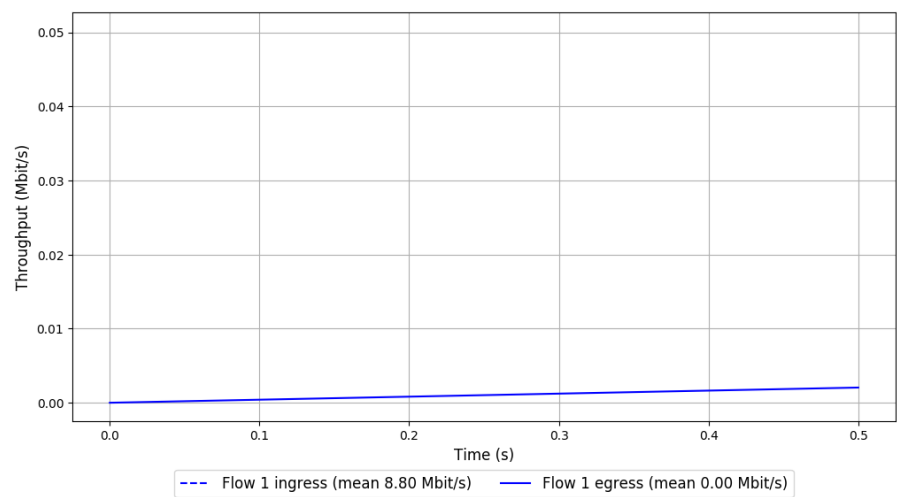
Run 3: Report of TaoVA-100x — Data Link
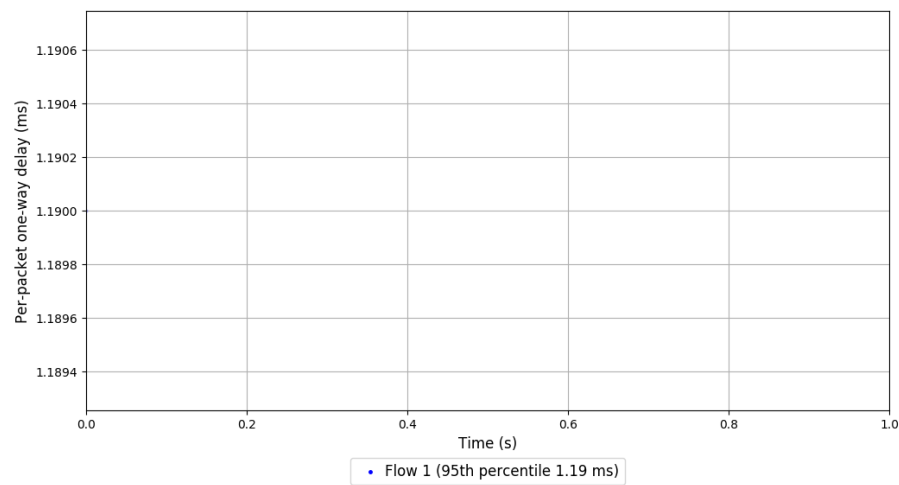
```
Run 4: Statistics of TaoVA-100x

Start at: 2018-10-26 00:53:56
End at: 2018-10-26 00:54:26
Local clock offset: 0.292 ms
Remote clock offset: 4.174 ms
```
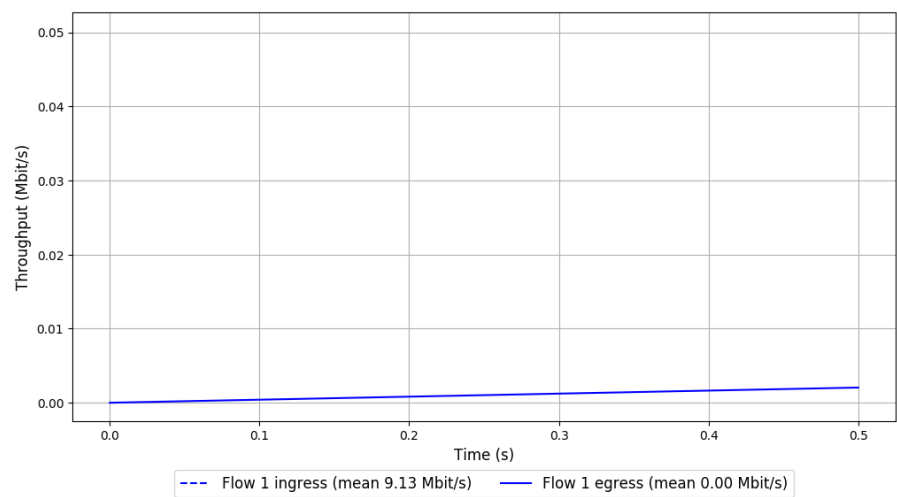
# Run 4: Report of TaoVA-100x — Data Link



Flow 1 ingress (mean 9.13 Mbit/s)     Flow 1 egress (mean 0.00 Mbit/s)



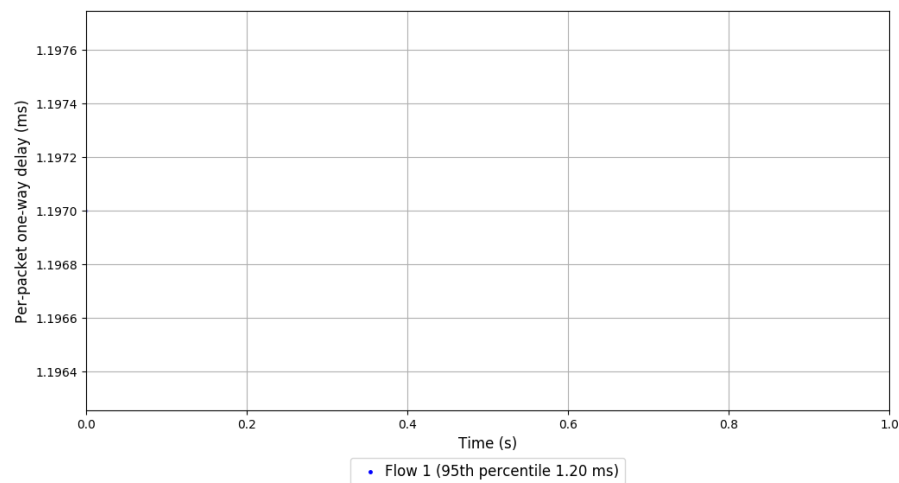Flow 1 (95th percentile 1.19 ms)
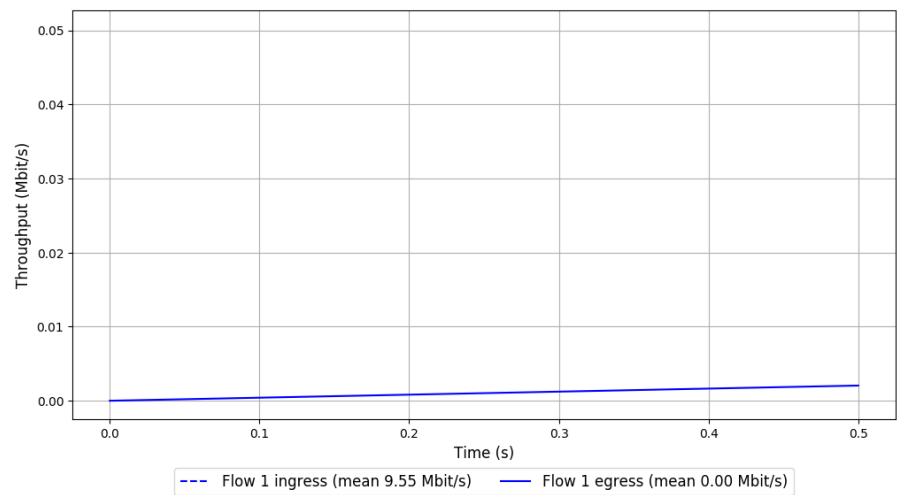
```
Run 5: Statistics of TaoVA-100x

Start at: 2018-10-26 01:19:53
End at: 2018-10-26 01:20:23
Local clock offset: 0.175 ms
Remote clock offset: 3.758 ms
```

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



Flow 1 ingress (mean 9.55 Mbit/s)    Flow 1 egress (mean 0.00 Mbit/s)



Flow 1 (95th percentile 1.20 ms)

```
Run 1: Statistics of TCP Vegas

Start at: 2018-10-25 23:37:14
End at: 2018-10-25 23:37:44
Local clock offset: -0.008 ms
Remote clock offset: 0.11 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 235.39 Mbit/s
95th percentile per-packet one-way delay: 1.416 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 235.39 Mbit/s
95th percentile per-packet one-way delay: 1.416 ms
Loss rate: 0.00%
```
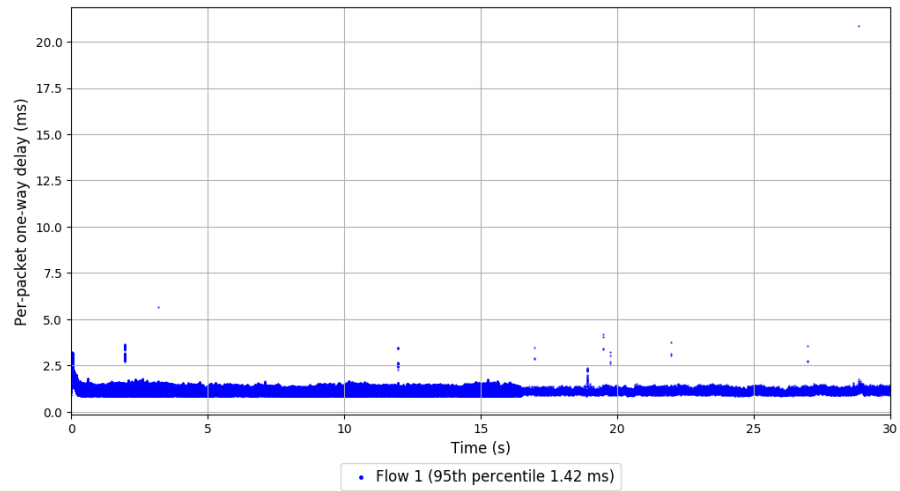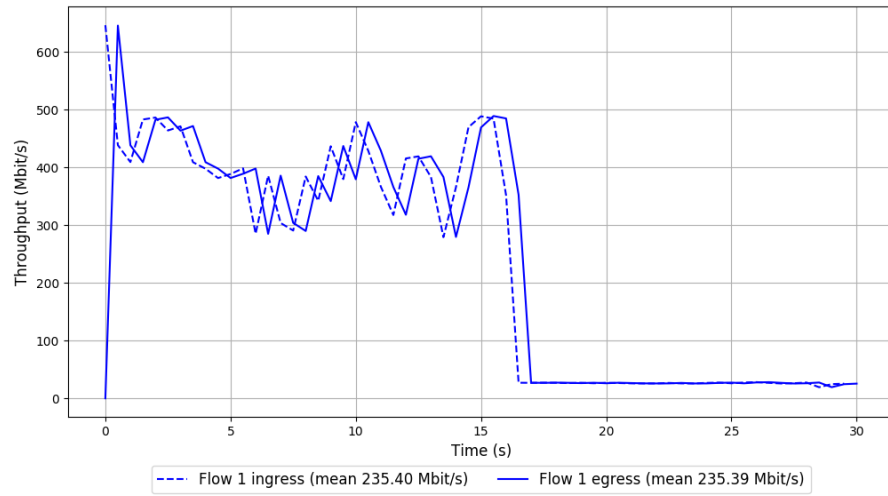
Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-10-26 00:03:11
End at: 2018-10-26 00:03:41
Local clock offset: 0.202 ms
Remote clock offset: 0.22 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 36.40 Mbit/s
95th percentile per-packet one-way delay: 1.226 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 36.40 Mbit/s
95th percentile per-packet one-way delay: 1.226 ms
Loss rate: 0.00%
```
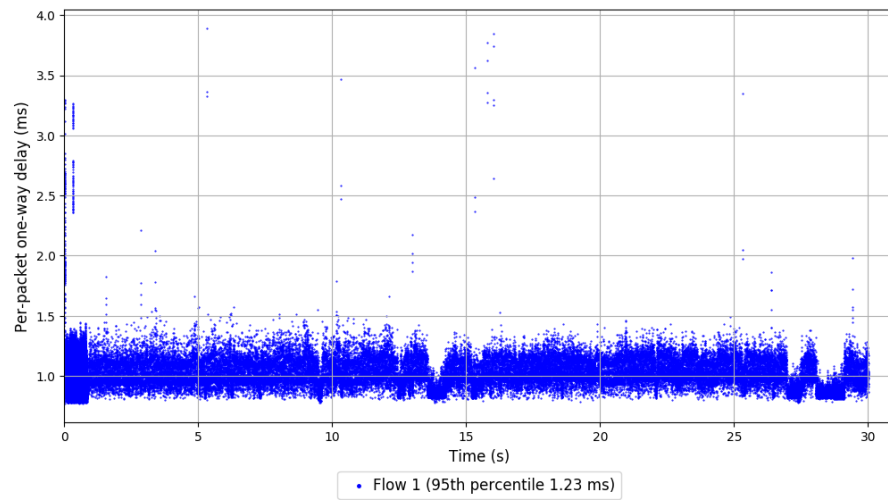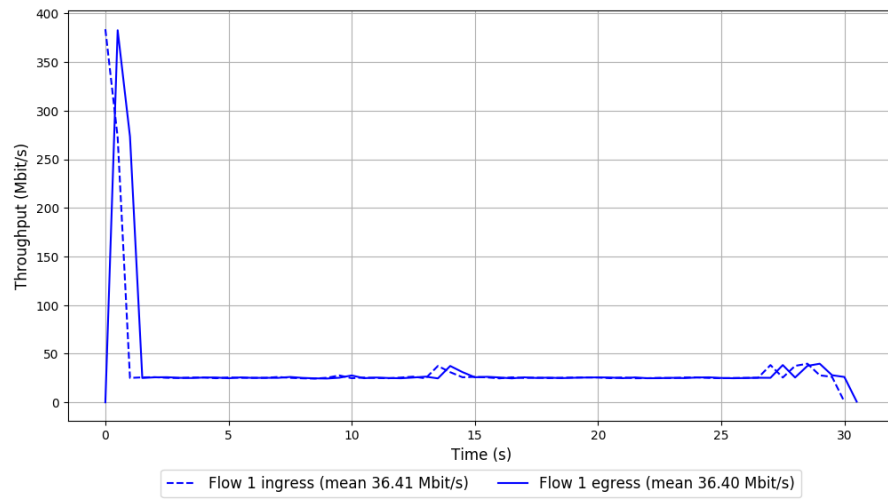
## Run 2: Report of TCP Vegas — Data Link



Flow 1 ingress (mean 36.41 Mbit/s)    Flow 1 egress (mean 36.40 Mbit/s)



Flow 1 (95th percentile 1.23 ms)

```
Run 3: Statistics of TCP Vegas

Start at: 2018-10-26 00:29:05
End at: 2018-10-26 00:29:35
Local clock offset: 0.382 ms
Remote clock offset: 0.537 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 352.67 Mbit/s
95th percentile per-packet one-way delay: 1.102 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 352.67 Mbit/s
95th percentile per-packet one-way delay: 1.102 ms
Loss rate: 0.00%
```
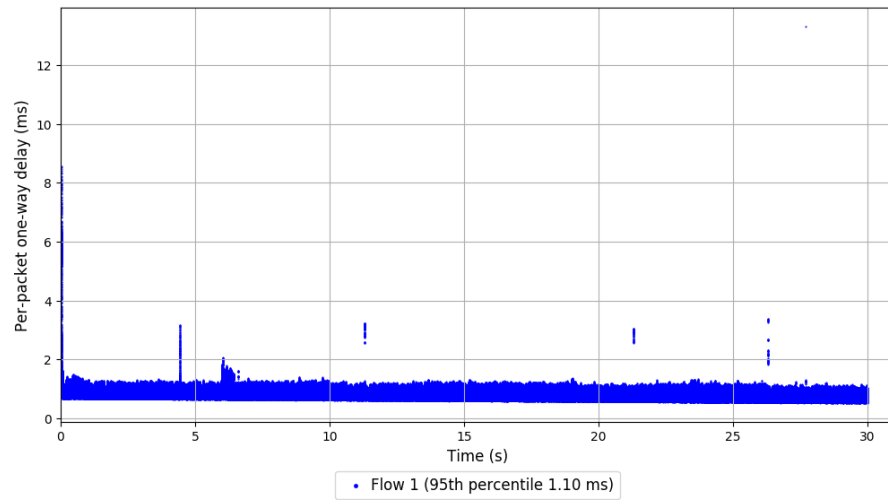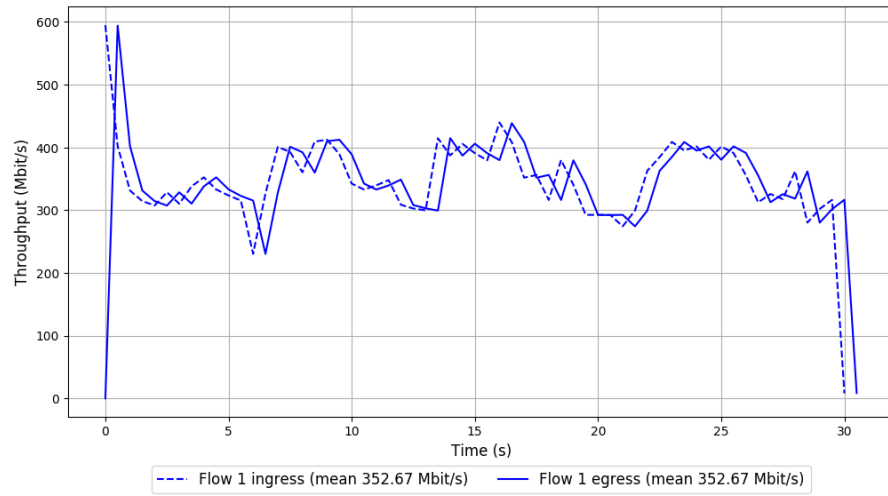
# Run 3: Report of TCP Vegas — Data Link



150

```
Run 4: Statistics of TCP Vegas

Start at: 2018-10-26 00:55:14
End at: 2018-10-26 00:55:44
Local clock offset: 0.269 ms
Remote clock offset: 4.254 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 346.24 Mbit/s
95th percentile per-packet one-way delay: 1.282 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 346.24 Mbit/s
95th percentile per-packet one-way delay: 1.282 ms
Loss rate: 0.01%
```
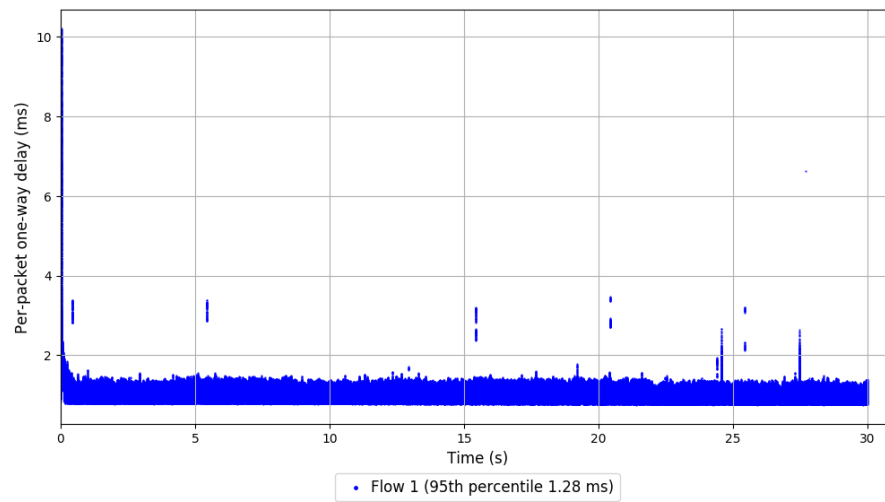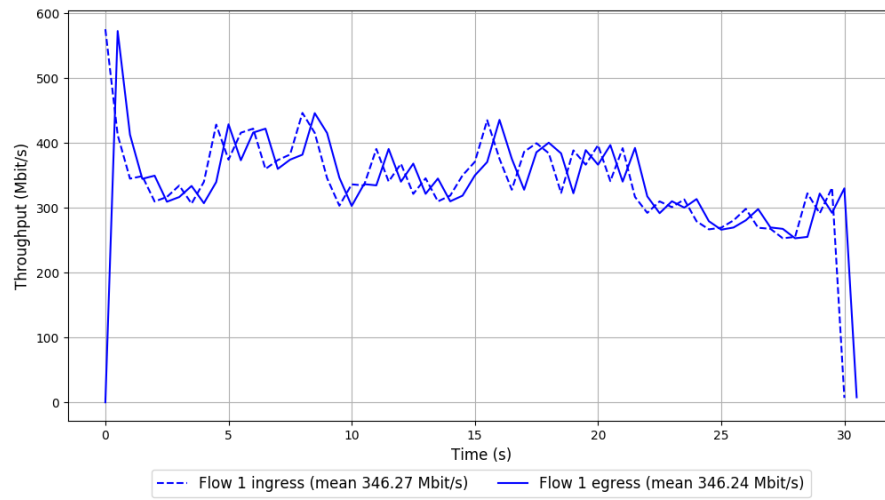
Run 4: Report of TCP Vegas — Data Link



Flow 1 ingress (mean 346.27 Mbit/s)    Flow 1 egress (mean 346.24 Mbit/s)



Flow 1 (95th percentile 1.28 ms)

```
Run 5: Statistics of TCP Vegas

Start at: 2018-10-26 01:21:11
End at: 2018-10-26 01:21:41
Local clock offset: 0.171 ms
Remote clock offset: 3.756 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 347.63 Mbit/s
95th percentile per-packet one-way delay: 1.265 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 347.63 Mbit/s
95th percentile per-packet one-way delay: 1.265 ms
Loss rate: 0.00%
```
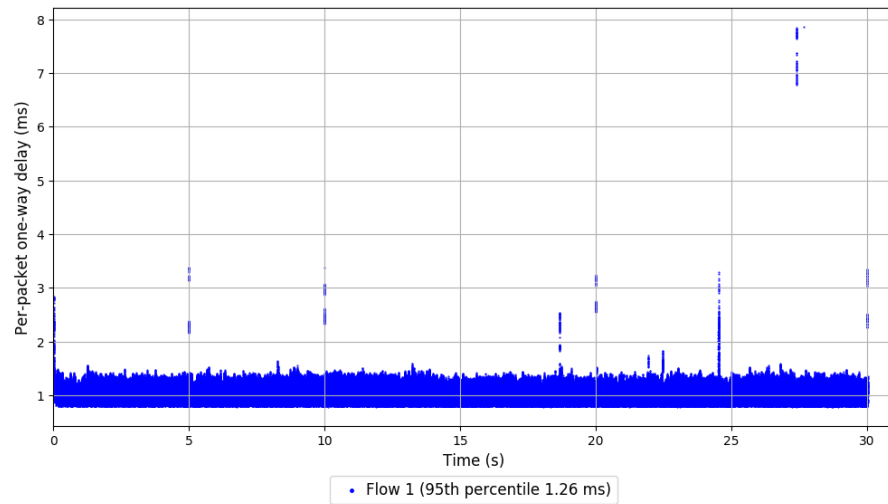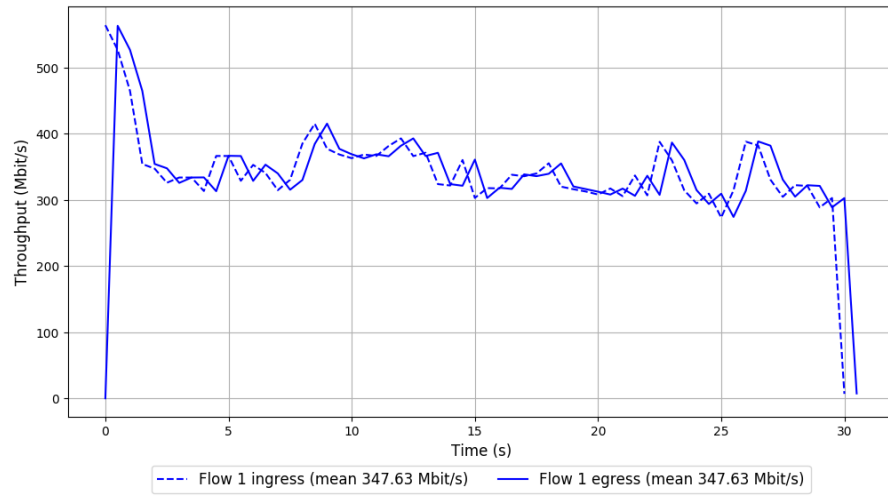
## Run 5: Report of TCP Vegas — Data Link



Flow 1 ingress (mean 347.63 Mbit/s)    Flow 1 egress (mean 347.63 Mbit/s)



Flow 1 (95th percentile 1.26 ms)

```
Run 1: Statistics of Verus

Start at: 2018-10-25 23:56:09
End at: 2018-10-25 23:56:39
Local clock offset: 0.182 ms
Remote clock offset: 0.291 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 206.81 Mbit/s
95th percentile per-packet one-way delay: 9.320 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 206.81 Mbit/s
95th percentile per-packet one-way delay: 9.320 ms
Loss rate: 0.85%
```
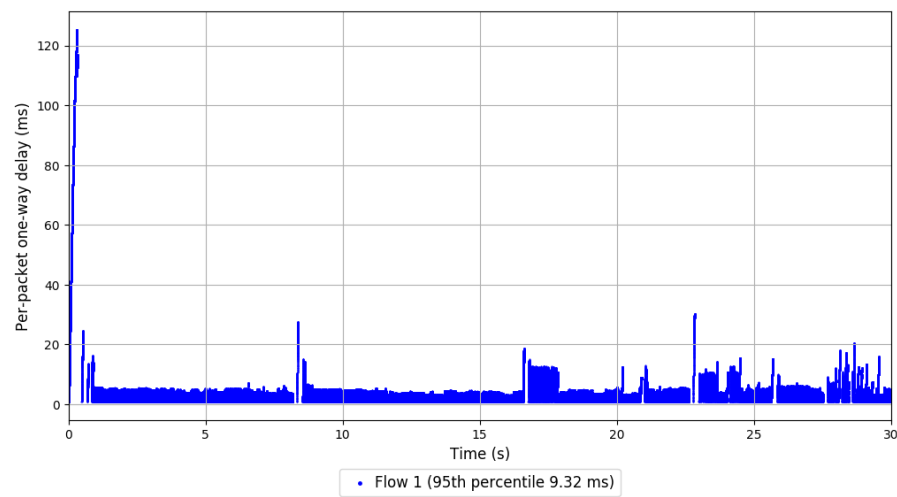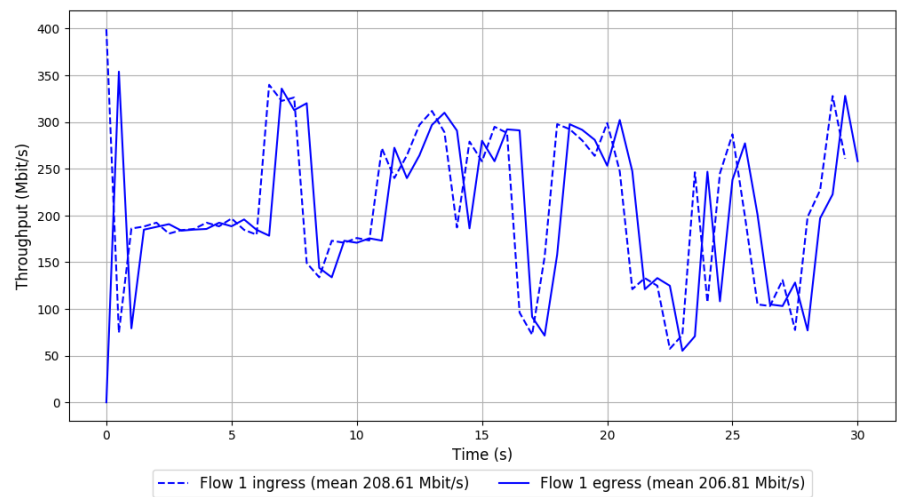
## Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-10-26 00:22:04
End at: 2018-10-26 00:22:34
Local clock offset: 0.323 ms
Remote clock offset: 0.288 ms

# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 136.44 Mbit/s
95th percentile per-packet one-way delay: 9.655 ms
Loss rate: 1.07%
-- Flow 1:
Average throughput: 136.44 Mbit/s
95th percentile per-packet one-way delay: 9.655 ms
Loss rate: 1.07%
```
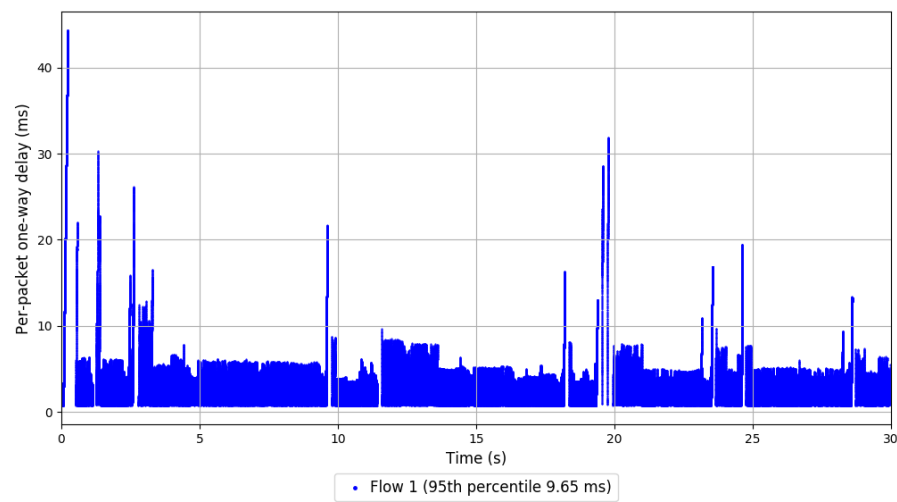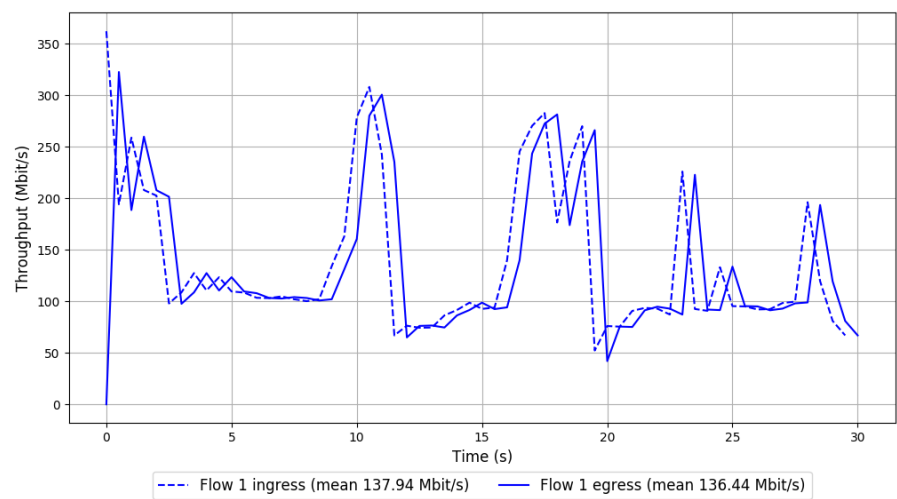
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-10-26 00:48:10
End at: 2018-10-26 00:48:40
Local clock offset: 0.268 ms
Remote clock offset: 3.649 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 182.70 Mbit/s
95th percentile per-packet one-way delay: 6.472 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 182.70 Mbit/s
95th percentile per-packet one-way delay: 6.472 ms
Loss rate: 0.69%
```
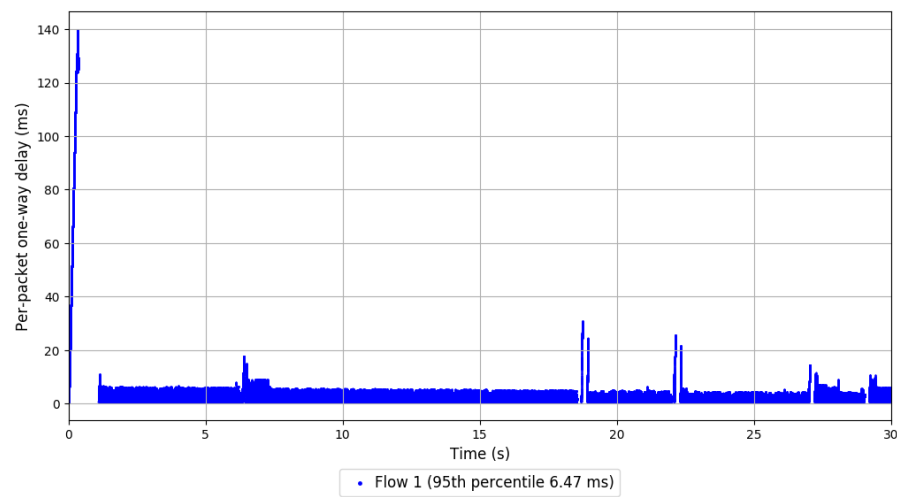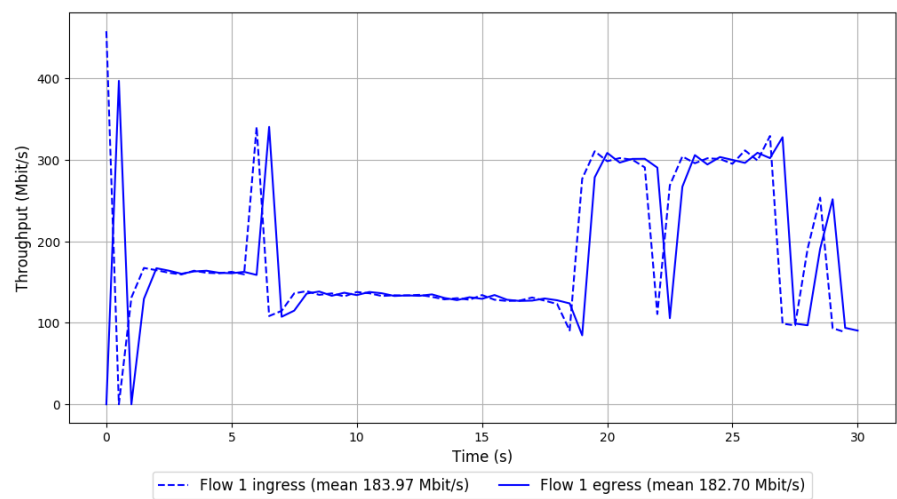
## Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2018-10-26 01:14:03
End at: 2018-10-26 01:14:33
Local clock offset: 0.202 ms
Remote clock offset: 3.717 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 265.75 Mbit/s
95th percentile per-packet one-way delay: 4.587 ms
Loss rate: 1.25%
-- Flow 1:
Average throughput: 265.75 Mbit/s
95th percentile per-packet one-way delay: 4.587 ms
Loss rate: 1.25%
```
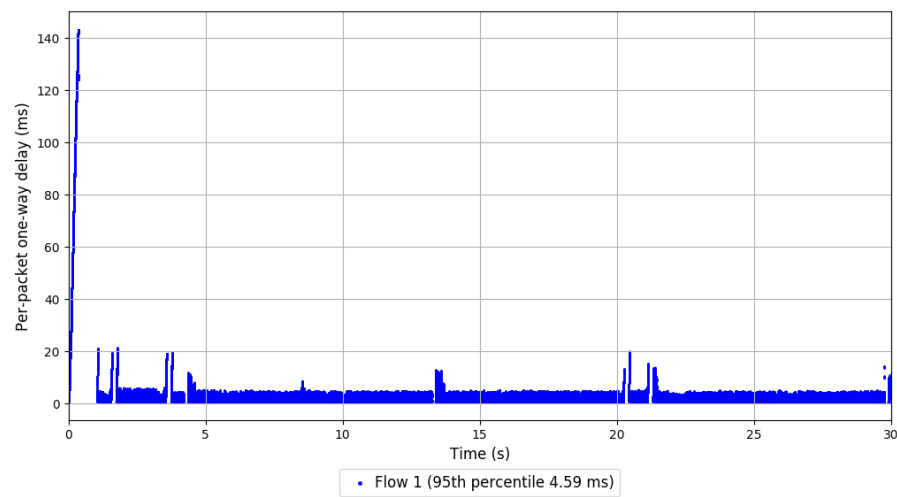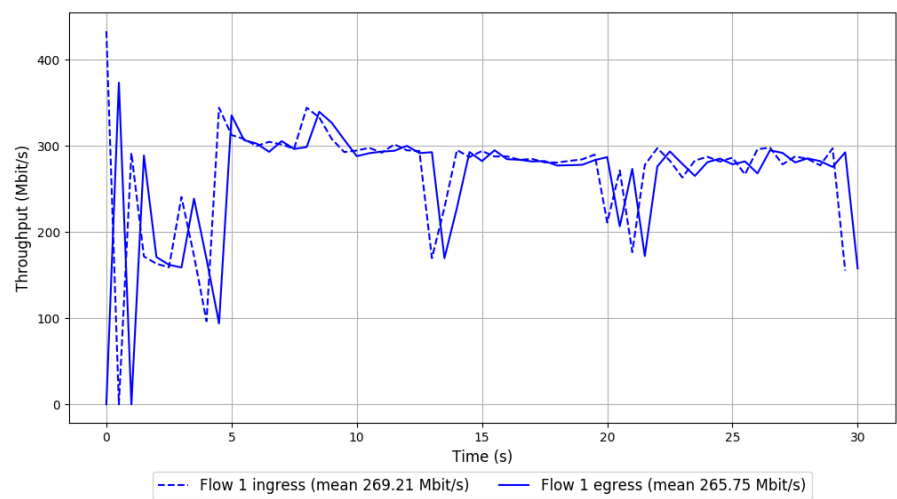
## Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2018-10-26 01:40:17
End at: 2018-10-26 01:40:47
Local clock offset: 0.221 ms
Remote clock offset: 3.718 ms

# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 204.09 Mbit/s
95th percentile per-packet one-way delay: 4.733 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 204.09 Mbit/s
95th percentile per-packet one-way delay: 4.733 ms
Loss rate: 0.23%
```
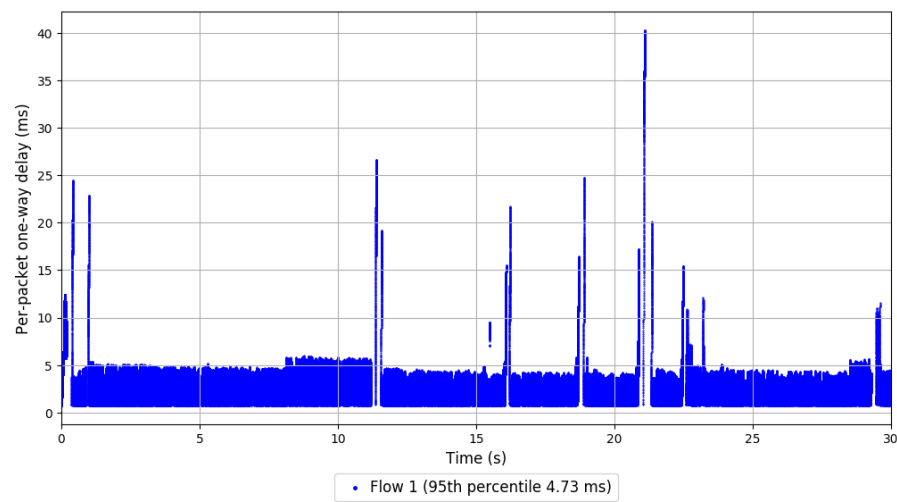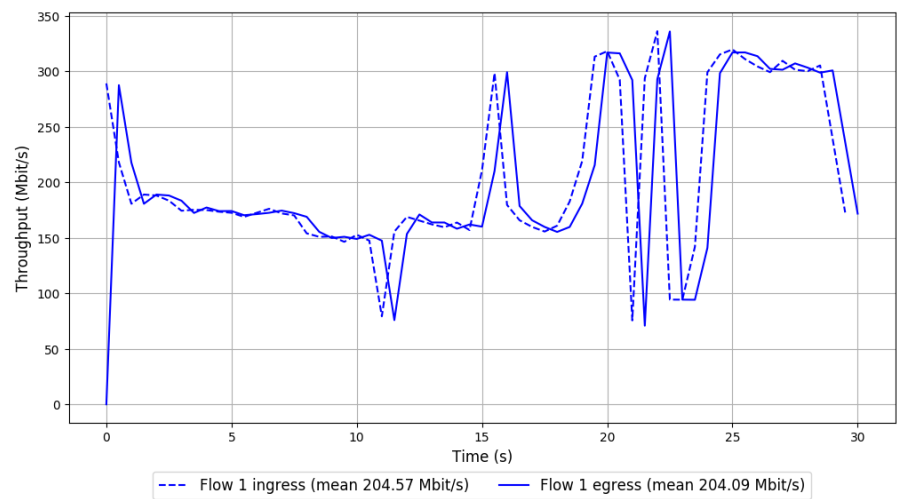
## Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-10-25 23:51:30
End at: 2018-10-25 23:52:00
Local clock offset: 0.266 ms
Remote clock offset: 0.271 ms


# Below is generated by plot.py at 2018-10-26 02:22:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 250.08 Mbit/s
95th percentile per-packet one-way delay: 1.076 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 250.08 Mbit/s
95th percentile per-packet one-way delay: 1.076 ms
Loss rate: 0.00%
```
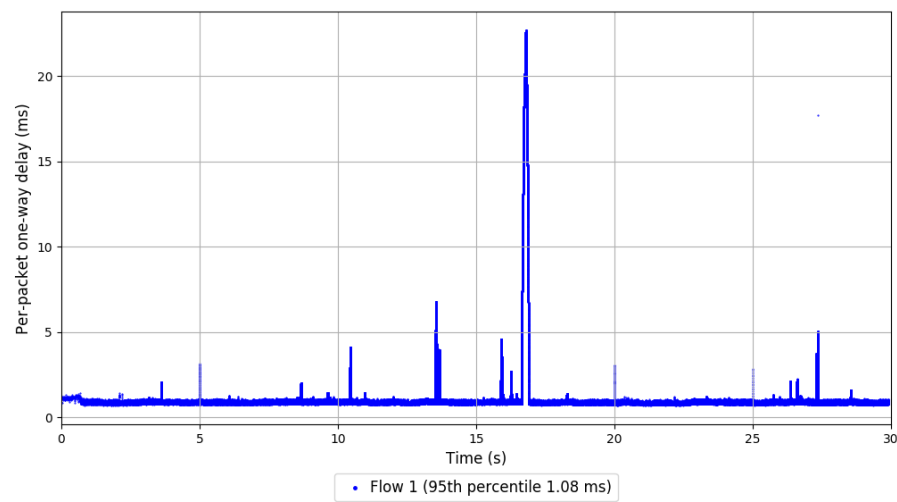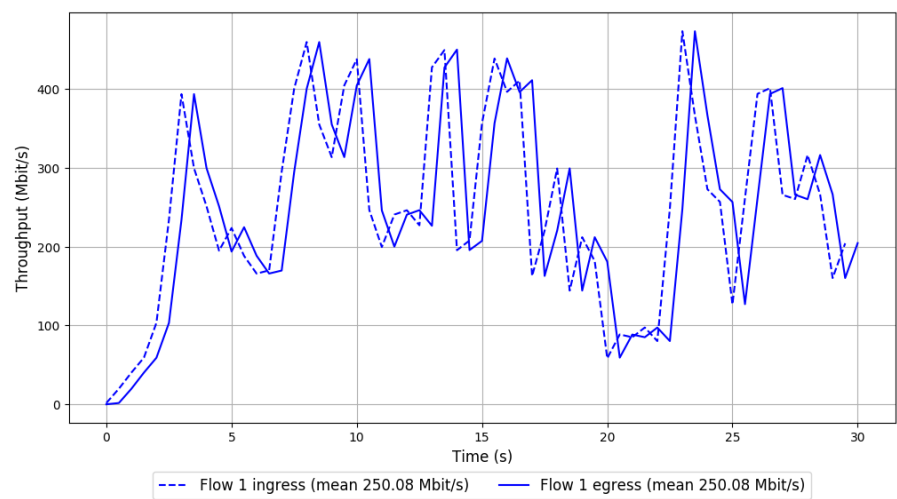
# Run 1: Report of PCC-Vivace — Data Link



Flow 1 ingress (mean 250.08 Mbit/s)    Flow 1 egress (mean 250.08 Mbit/s)



Flow 1 (95th percentile 1.08 ms)

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-10-26 00:17:24
End at: 2018-10-26 00:17:54
Local clock offset: 0.289 ms
Remote clock offset: 0.31 ms


# Below is generated by plot.py at 2018-10-26 02:23:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 314.12 Mbit/s
95th percentile per-packet one-way delay: 1.450 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 314.12 Mbit/s
95th percentile per-packet one-way delay: 1.450 ms
Loss rate: 0.01%
```
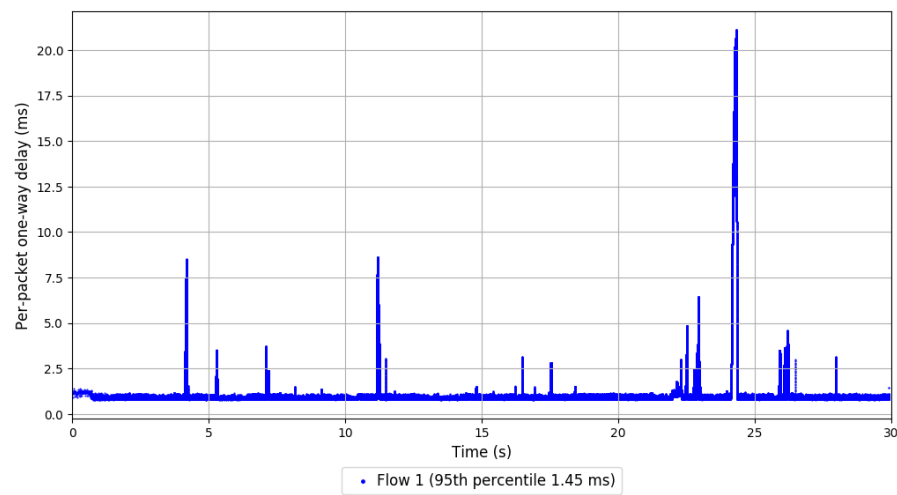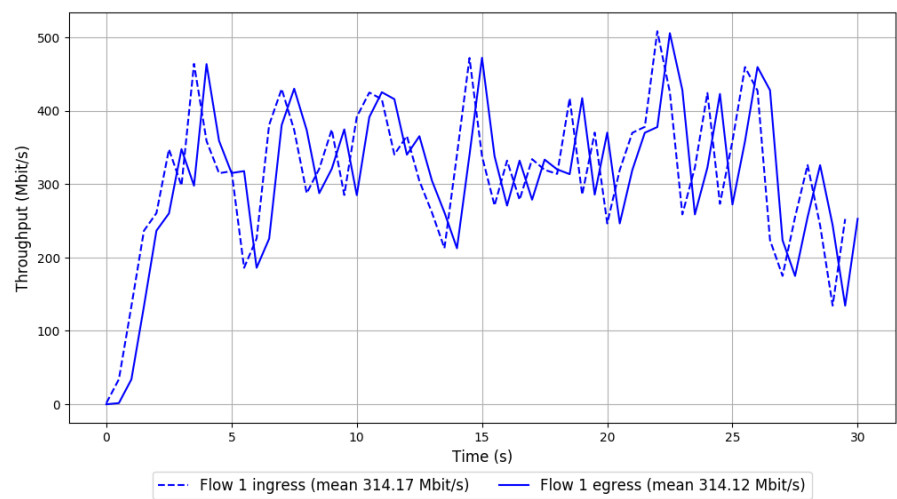
Run 2: Report of PCC-Vivace — Data Link

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-10-26 00:43:25
End at: 2018-10-26 00:43:55
Local clock offset: 0.283 ms
Remote clock offset: 3.287 ms


# Below is generated by plot.py at 2018-10-26 02:23:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 267.86 Mbit/s
95th percentile per-packet one-way delay: 4.096 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 267.86 Mbit/s
95th percentile per-packet one-way delay: 4.096 ms
Loss rate: 0.00%
```
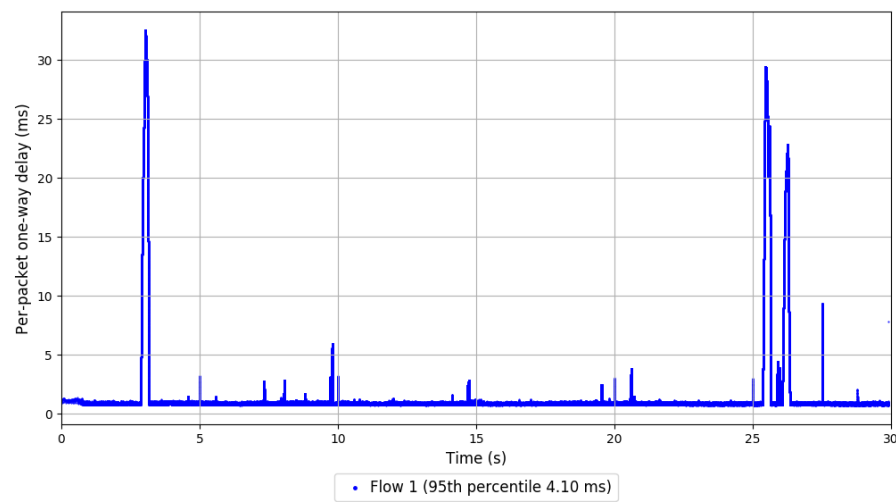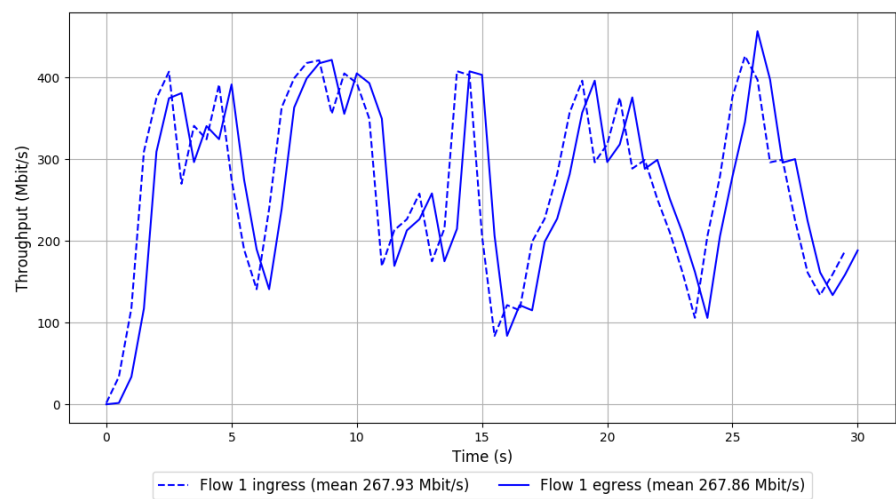
## Run 3: Report of PCC-Vivace — Data Link



Flow 1 ingress (mean 267.93 Mbit/s) — Flow 1 egress (mean 267.86 Mbit/s)



Flow 1 (95th percentile 4.10 ms)

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-10-26 01:09:26
End at: 2018-10-26 01:09:56
Local clock offset: 0.213 ms
Remote clock offset: 3.905 ms


# Below is generated by plot.py at 2018-10-26 02:23:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 251.80 Mbit/s
95th percentile per-packet one-way delay: 0.984 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 251.80 Mbit/s
95th percentile per-packet one-way delay: 0.984 ms
Loss rate: 0.00%
```
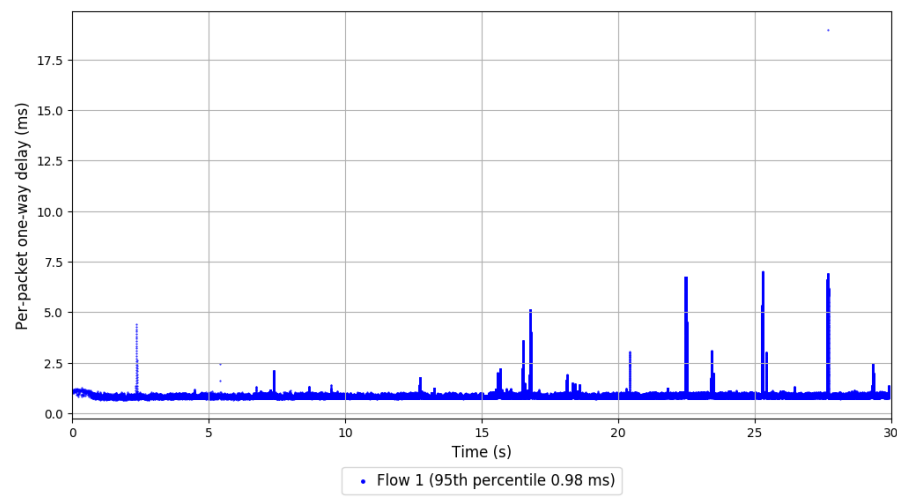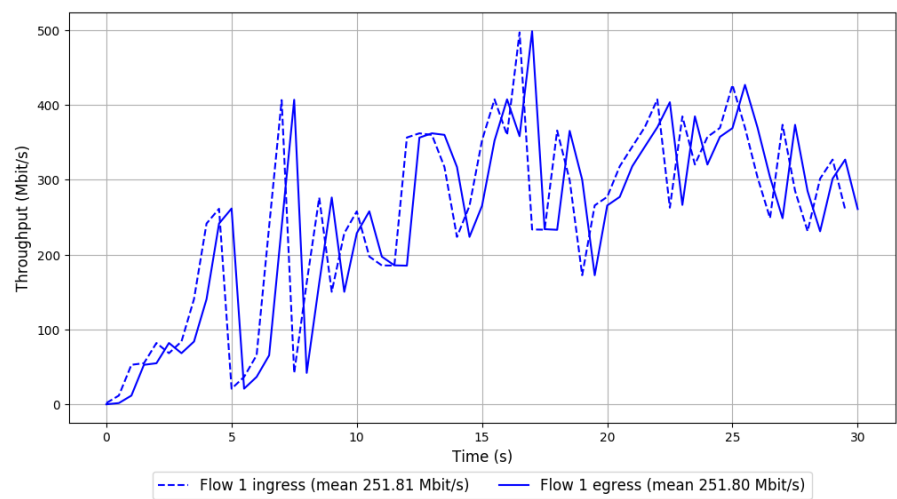
## Run 4: Report of PCC-Vivace — Data Link



Flow 1 ingress (mean 251.81 Mbit/s) ----  Flow 1 egress (mean 251.80 Mbit/s) ——



Flow 1 (95th percentile 0.98 ms)

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-10-26 01:35:37
End at: 2018-10-26 01:36:07
Local clock offset: 0.183 ms
Remote clock offset: 4.004 ms


# Below is generated by plot.py at 2018-10-26 02:23:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 287.54 Mbit/s
95th percentile per-packet one-way delay: 2.116 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 287.54 Mbit/s
95th percentile per-packet one-way delay: 2.116 ms
Loss rate: 0.01%
```
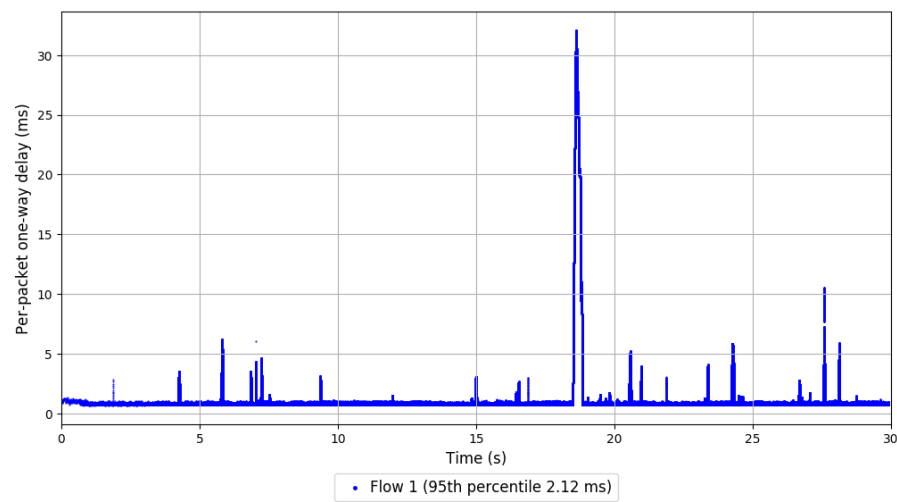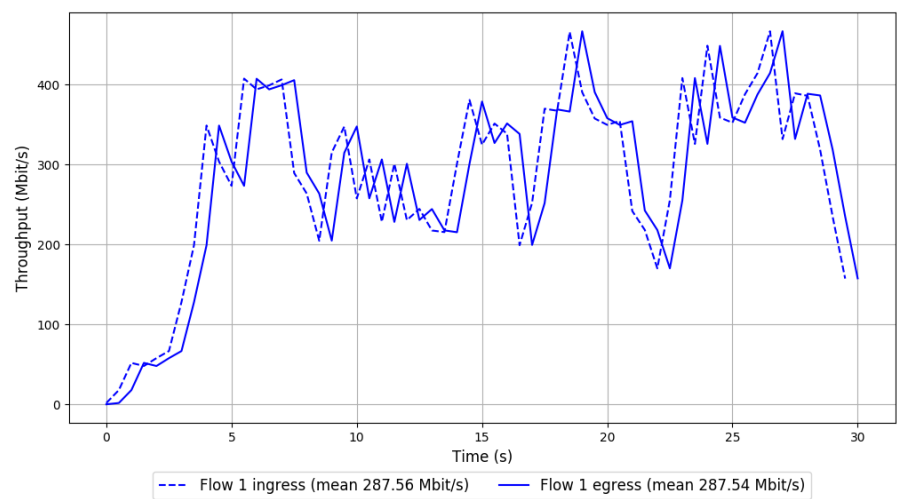
## Run 5: Report of PCC-Vivace — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2018-10-25 23:42:59
End at: 2018-10-25 23:43:29
Local clock offset: 0.214 ms
Remote clock offset: 0.071 ms


# Below is generated by plot.py at 2018-10-26 02:23:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 1.149 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 1.149 ms
Loss rate: 0.00%
```
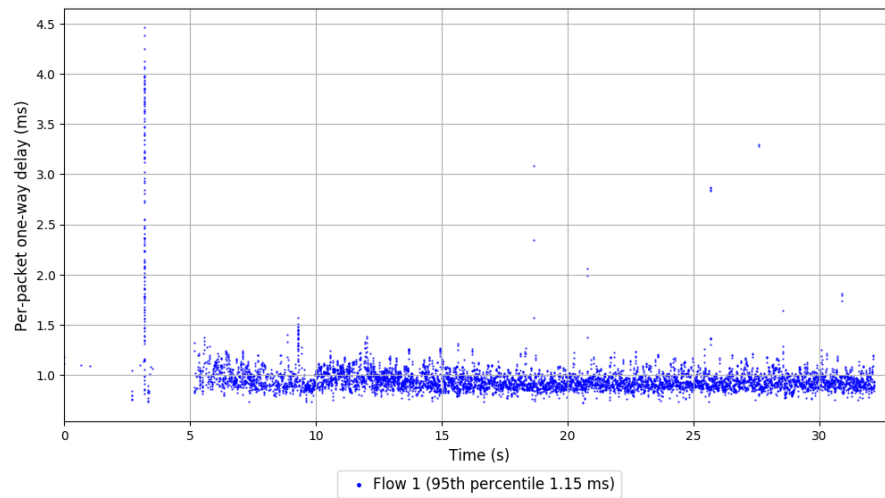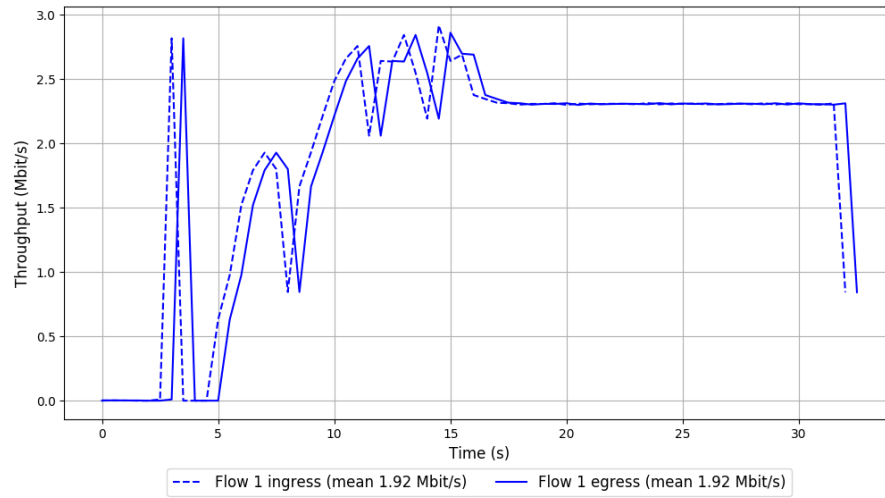
Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-10-26 00:08:50
End at: 2018-10-26 00:09:20
Local clock offset: 0.225 ms
Remote clock offset: 0.28 ms


# Below is generated by plot.py at 2018-10-26 02:23:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.94 Mbit/s
95th percentile per-packet one-way delay: 1.256 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.94 Mbit/s
95th percentile per-packet one-way delay: 1.256 ms
Loss rate: 0.00%
```
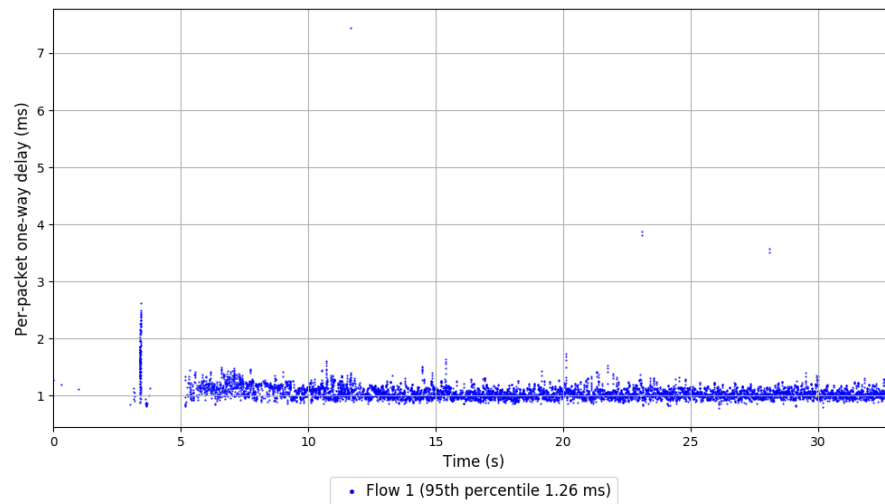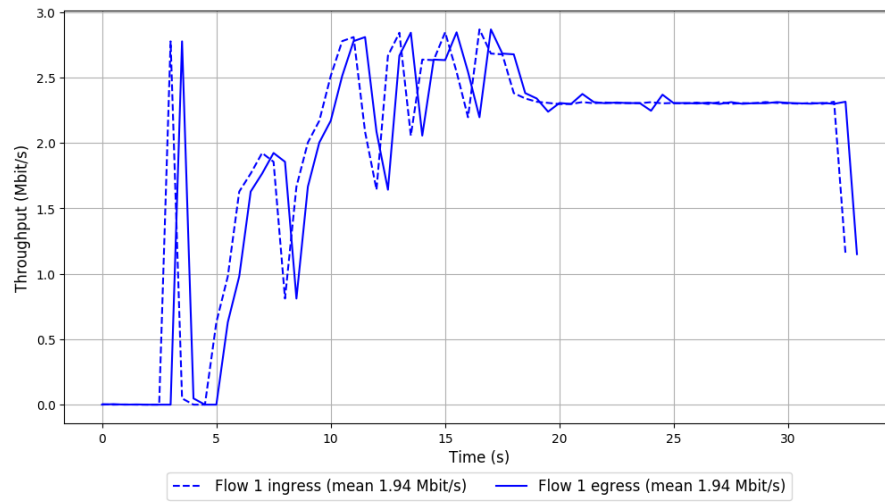
Run 2: Report of WebRTC media — Data Link



Flow 1 ingress (mean 1.94 Mbit/s)    Flow 1 egress (mean 1.94 Mbit/s)



Flow 1 (95th percentile 1.26 ms)

```
Run 3: Statistics of WebRTC media

Start at: 2018-10-26 00:34:53
End at: 2018-10-26 00:35:23
Local clock offset: 0.352 ms
Remote clock offset: 2.062 ms


# Below is generated by plot.py at 2018-10-26 02:23:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.94 Mbit/s
95th percentile per-packet one-way delay: 1.094 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.94 Mbit/s
95th percentile per-packet one-way delay: 1.094 ms
Loss rate: 0.00%
```
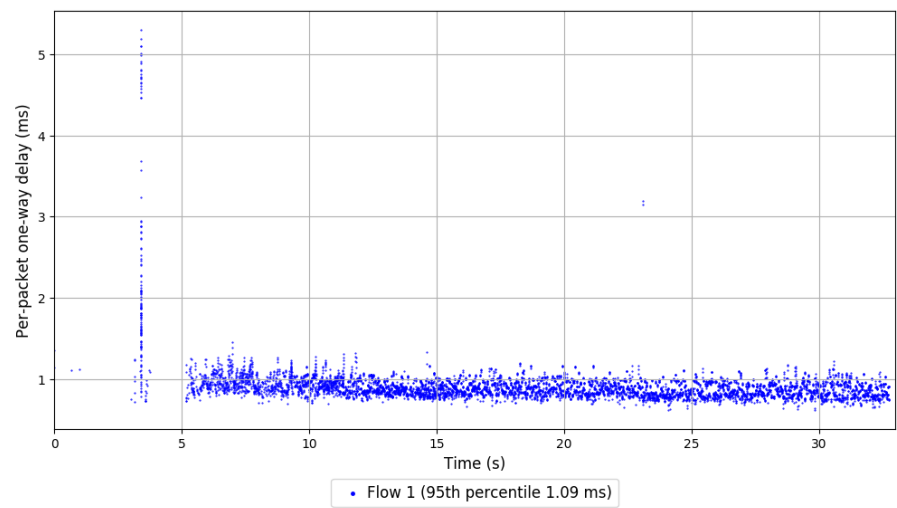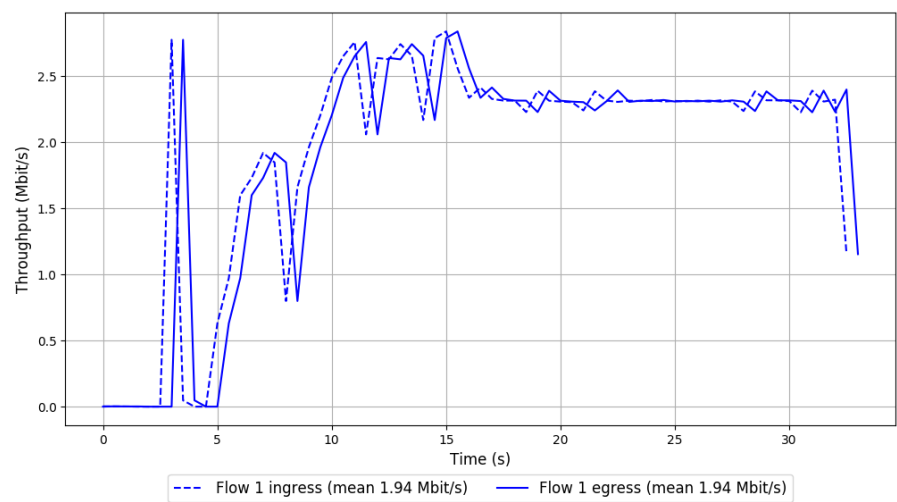
Run 3: Report of WebRTC media — Data Link

```
Run 4: Statistics of WebRTC media

Start at: 2018-10-26 01:01:04
End at: 2018-10-26 01:01:34
Local clock offset: 0.264 ms
Remote clock offset: 4.564 ms


# Below is generated by plot.py at 2018-10-26 02:23:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 1.138 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.93 Mbit/s
95th percentile per-packet one-way delay: 1.138 ms
Loss rate: 0.00%
```
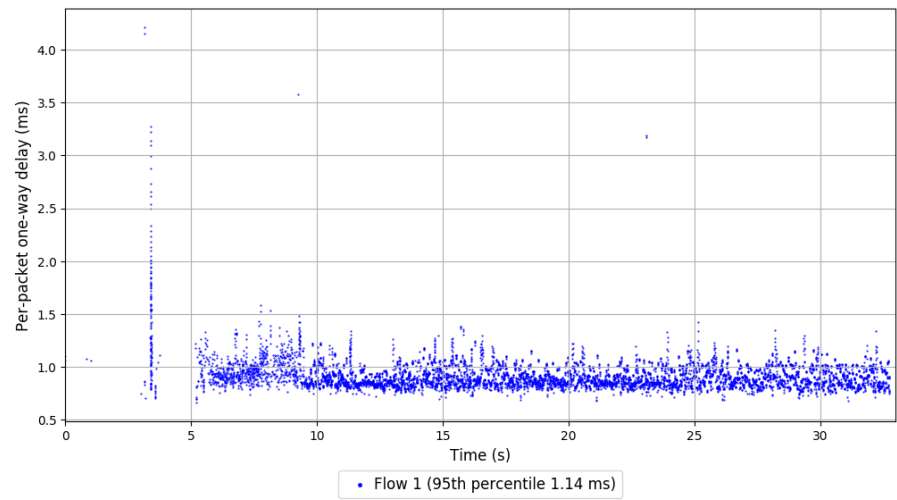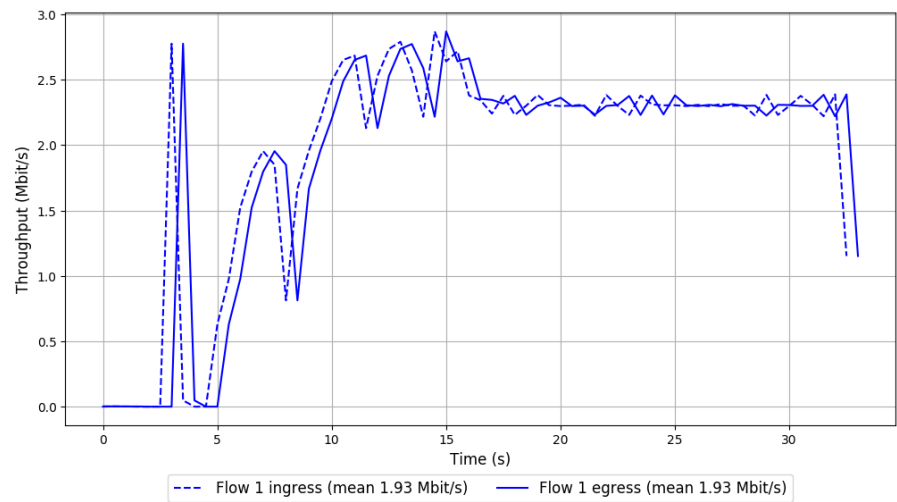
Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2018-10-26 01:27:03
End at: 2018-10-26 01:27:33
Local clock offset: 0.152 ms
Remote clock offset: 3.803 ms


# Below is generated by plot.py at 2018-10-26 02:23:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 1.126 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 1.126 ms
Loss rate: 0.00%
```

Run 5: Report of WebRTC media — Data Link