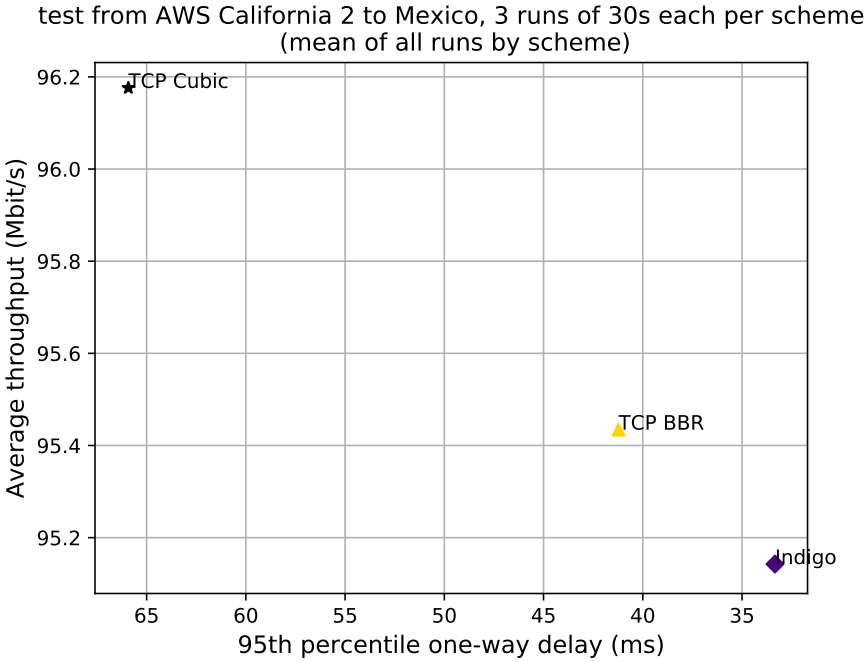
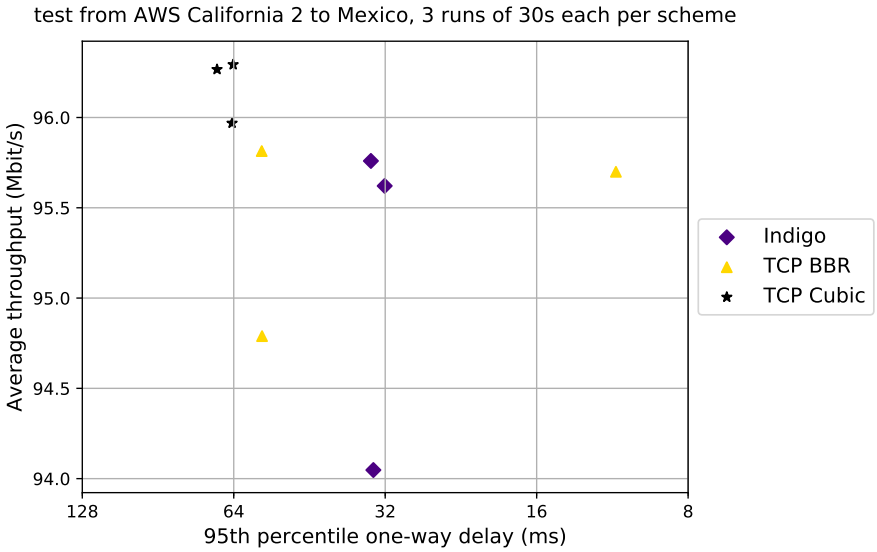
Pantheon Report

Generated at 2018-08-31 06:52:31 (UTC).
Data path: AWS California 2 on `ens5` (*local*) →Mexico on `em1` (*remote*).
Repeated the test of 4 congestion control schemes 3 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 4.15.0-1020-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
net.ipv4.tcp_mem = 536870912 536870912 536870912

Git summary:
branch: muses @ 2de97ca91a065473c29a25fffe63fb137c97a67c
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ b59e0d118c50af3579569c462d33045741c85981
third_party/pantheon-tunnel @ cbfce6db5ff5740dafe1771f813cd646339e1952
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
 M src/ScreamClient
 M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
 M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```


test from AWS California 2 to Mexico, 3 runs of 30s each per scheme
(mean of all runs by scheme)
TCP Cubic
TCP BBR
Indigo
Average throughput (Mbit/s)
95th percentile one-way delay (ms)
96.2
96.0
95.8
95.6
95.4
95.2
65
60
55
50
45
40
35


test from AWS California 2 to Mexico, 3 runs of 30s each per scheme
Average throughput (Mbit/s)
95th percentile one-way delay (ms)
96.0
95.5
95.0
94.5
94.0
128
64
32
16
8
Indigo
TCP BBR
TCP Cubic

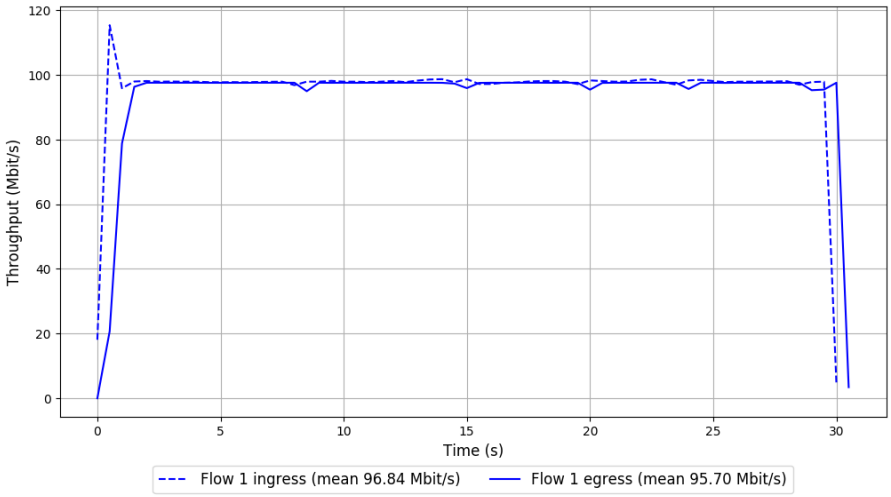
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	95.43	41.22	0.98
TCP Cubic	3	96.18	65.92	0.56
Indigo	3	95.14	33.34	0.01
Muses-25	0	N/A	N/A	N/A

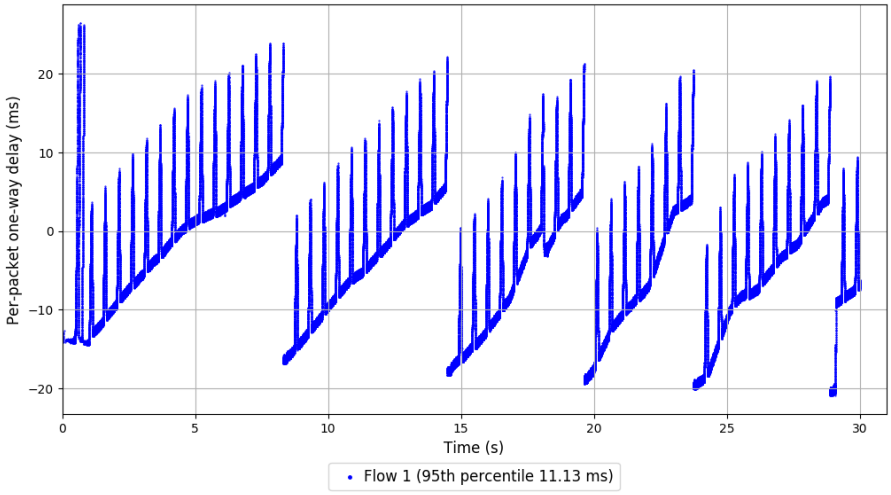
```
Run 1: Statistics of TCP BBR

Start at: 2018-08-31 06:36:10
End at: 2018-08-31 06:36:40
Local clock offset: 49.272 ms
Remote clock offset: -2.203 ms

# Below is generated by plot.py at 2018-08-31 06:52:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.70 Mbit/s
95th percentile per-packet one-way delay: 11.132 ms
Loss rate: 1.15%
-- Flow 1:
Average throughput: 95.70 Mbit/s
95th percentile per-packet one-way delay: 11.132 ms
Loss rate: 1.15%
```

Run 1: Report of TCP BBR — Data Link



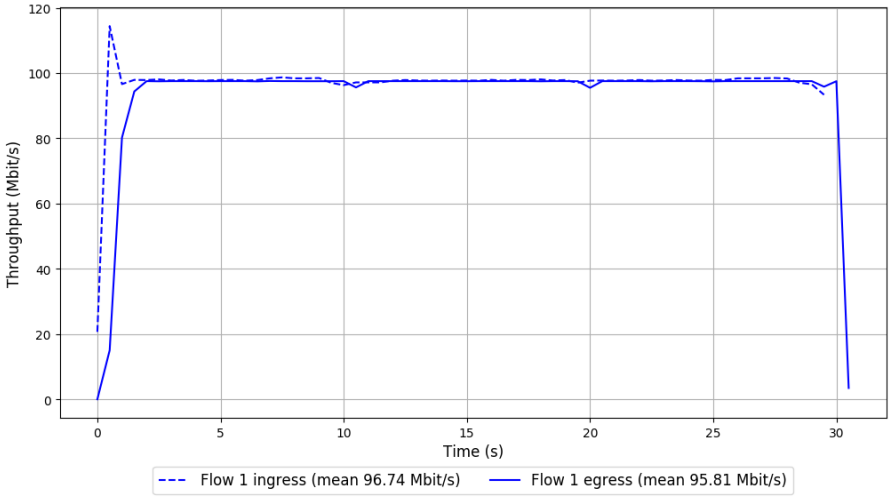


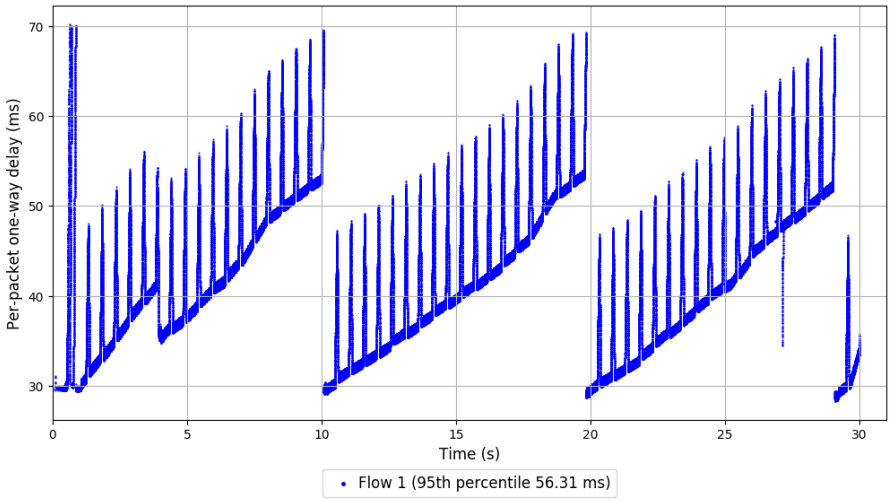
```
Run 2: Statistics of TCP BBR

Start at: 2018-08-31 06:41:23
End at: 2018-08-31 06:41:53
Local clock offset: -7.11 ms
Remote clock offset: -2.434 ms

# Below is generated by plot.py at 2018-08-31 06:52:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.81 Mbit/s
95th percentile per-packet one-way delay: 56.310 ms
Loss rate: 0.94%
-- Flow 1:
Average throughput: 95.81 Mbit/s
95th percentile per-packet one-way delay: 56.310 ms
Loss rate: 0.94%
```

Run 2: Report of TCP BBR — Data Link



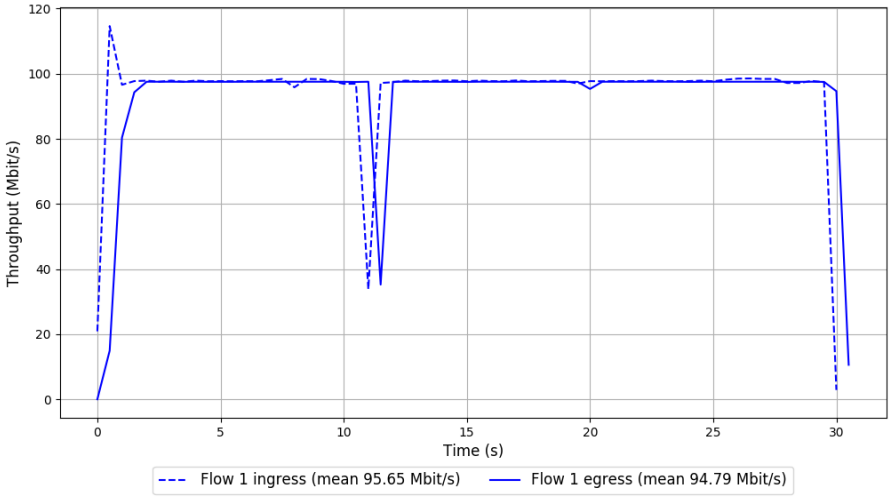


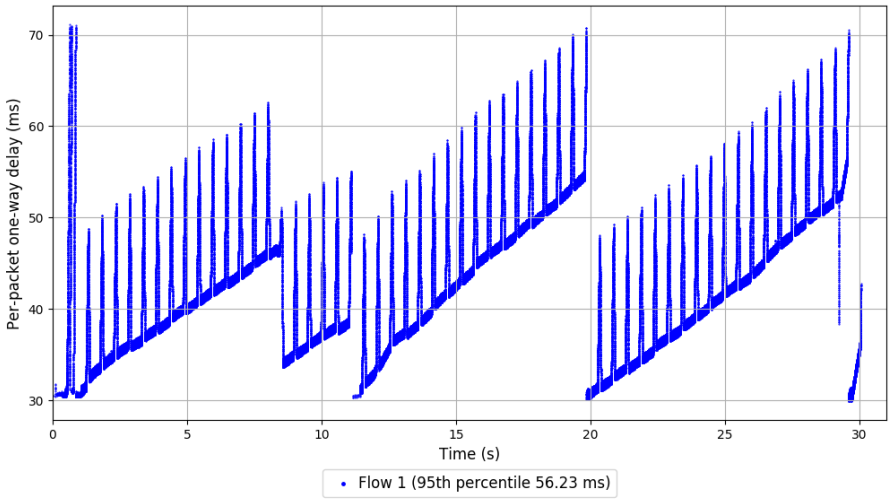
```
Run 3: Statistics of TCP BBR

Start at: 2018-08-31 06:46:35
End at: 2018-08-31 06:47:05
Local clock offset: -9.802 ms
Remote clock offset: -2.19 ms

# Below is generated by plot.py at 2018-08-31 06:52:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.79 Mbit/s
95th percentile per-packet one-way delay: 56.226 ms
Loss rate: 0.86%
-- Flow 1:
Average throughput: 94.79 Mbit/s
95th percentile per-packet one-way delay: 56.226 ms
Loss rate: 0.86%
```

Run 3: Report of TCP BBR — Data Link



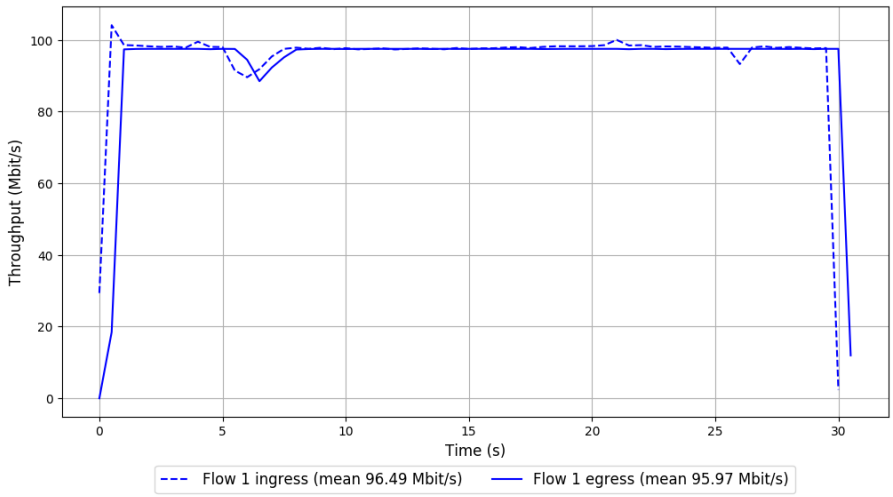


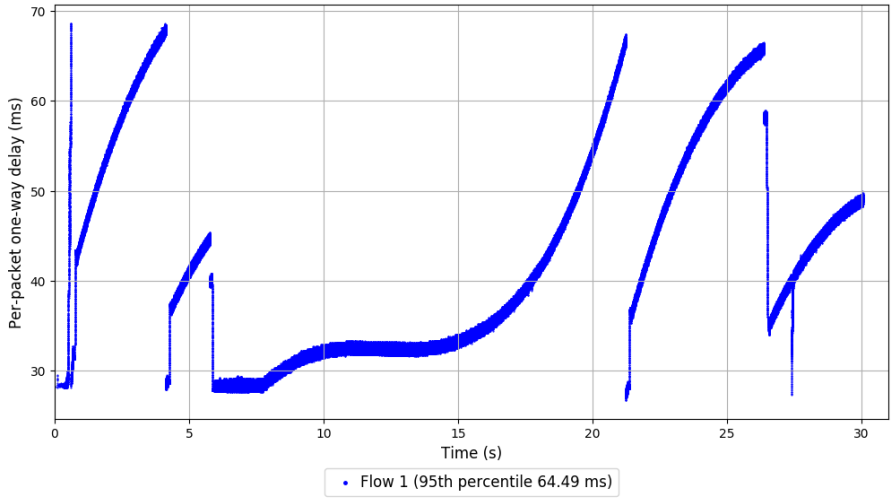
```
Run 1: Statistics of TCP Cubic

Start at: 2018-08-31 06:38:49
End at: 2018-08-31 06:39:19
Local clock offset: -5.211 ms
Remote clock offset: -2.224 ms

# Below is generated by plot.py at 2018-08-31 06:52:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.97 Mbit/s
95th percentile per-packet one-way delay: 64.492 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 95.97 Mbit/s
95th percentile per-packet one-way delay: 64.492 ms
Loss rate: 0.47%
```

Run 1: Report of TCP Cubic — Data Link



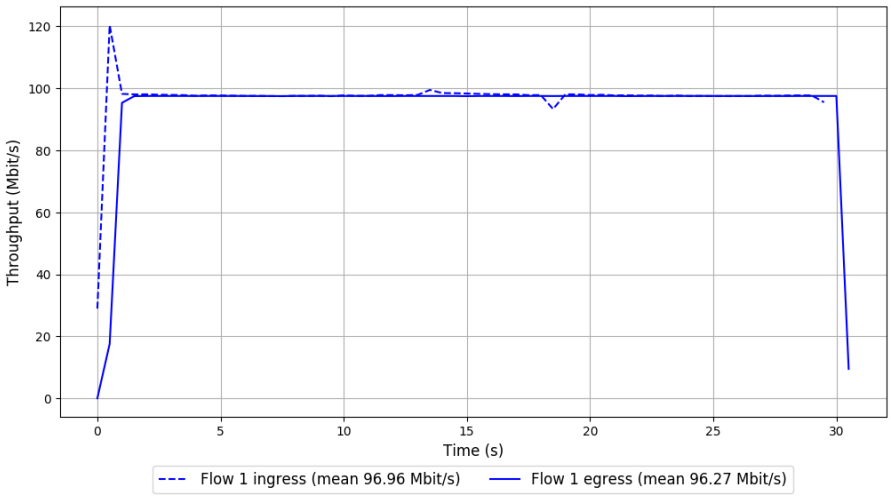


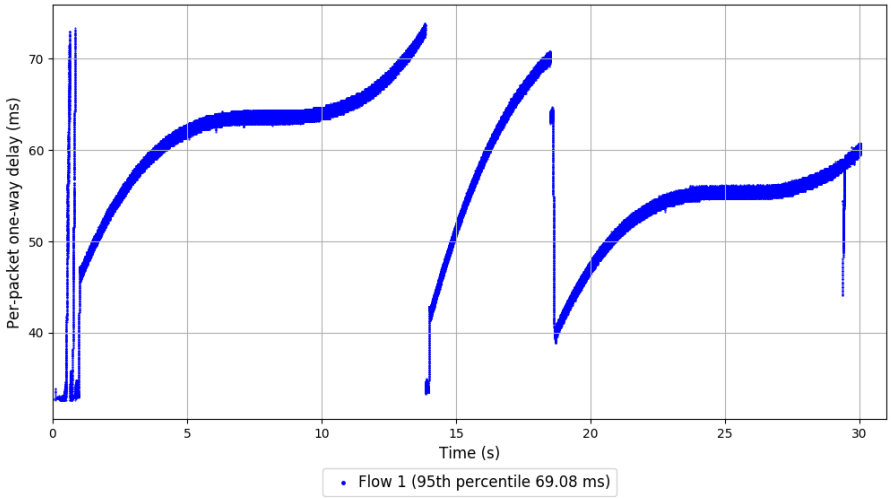
```
Run 2: Statistics of TCP Cubic

Start at: 2018-08-31 06:44:01
End at: 2018-08-31 06:44:31
Local clock offset: -13.799 ms
Remote clock offset: -2.348 ms

# Below is generated by plot.py at 2018-08-31 06:52:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.27 Mbit/s
95th percentile per-packet one-way delay: 69.085 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 96.27 Mbit/s
95th percentile per-packet one-way delay: 69.085 ms
Loss rate: 0.62%
```

Run 2: Report of TCP Cubic — Data Link



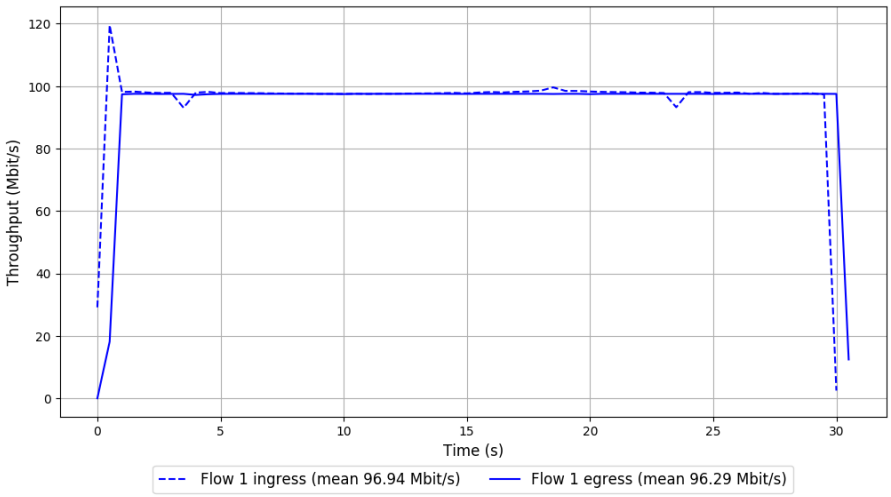


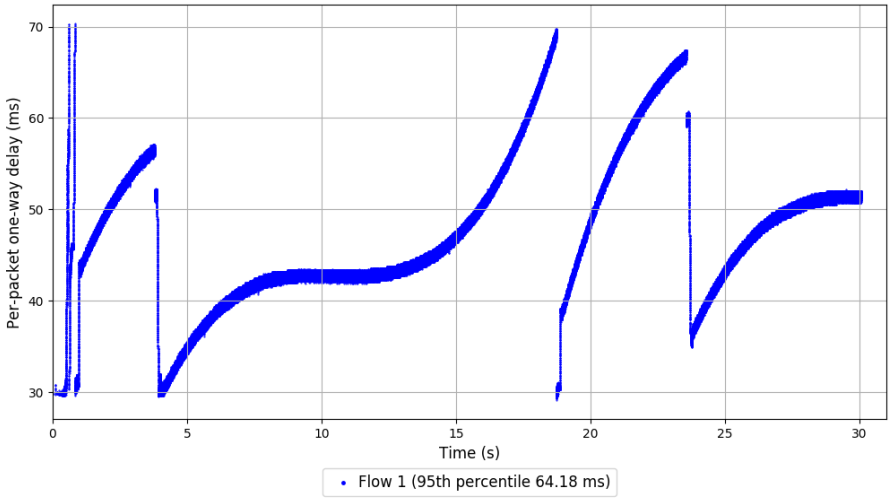
```
Run 3: Statistics of TCP Cubic

Start at: 2018-08-31 06:49:14
End at: 2018-08-31 06:49:44
Local clock offset: -13.176 ms
Remote clock offset: -2.183 ms

# Below is generated by plot.py at 2018-08-31 06:52:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.29 Mbit/s
95th percentile per-packet one-way delay: 64.178 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 96.29 Mbit/s
95th percentile per-packet one-way delay: 64.178 ms
Loss rate: 0.60%
```

Run 3: Report of TCP Cubic — Data Link



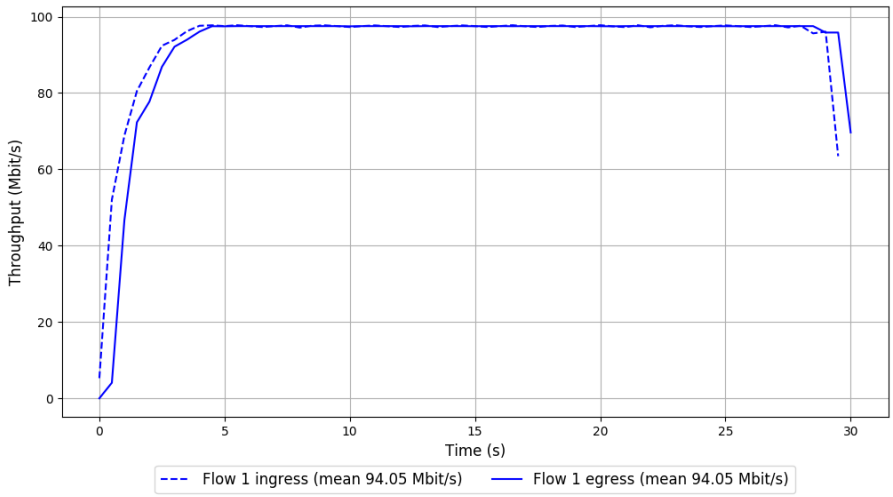


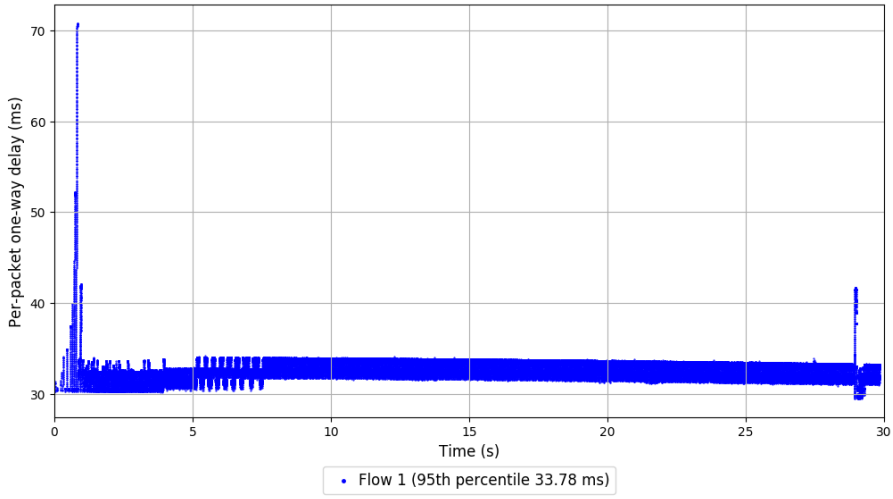
```
Run 1: Statistics of Indigo

Start at: 2018-08-31 06:37:29
End at: 2018-08-31 06:37:59
Local clock offset: -3.674 ms
Remote clock offset: -2.356 ms

# Below is generated by plot.py at 2018-08-31 06:52:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.05 Mbit/s
95th percentile per-packet one-way delay: 33.780 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 94.05 Mbit/s
95th percentile per-packet one-way delay: 33.780 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo — Data Link



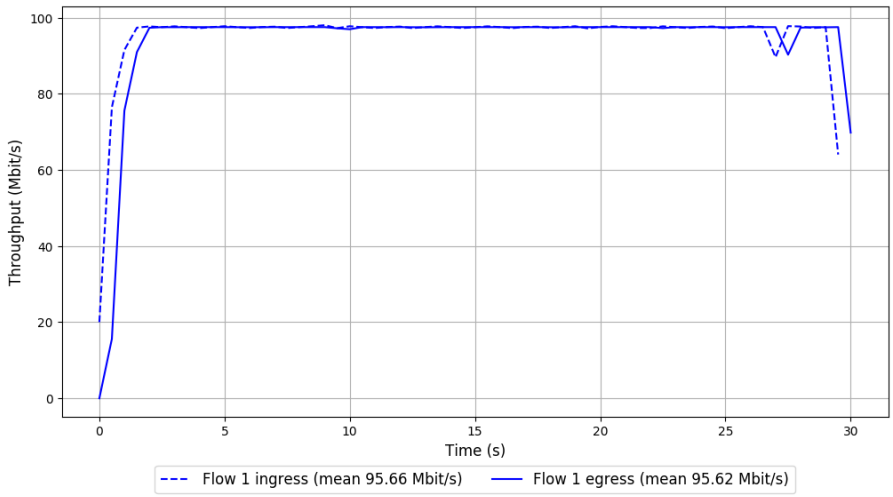


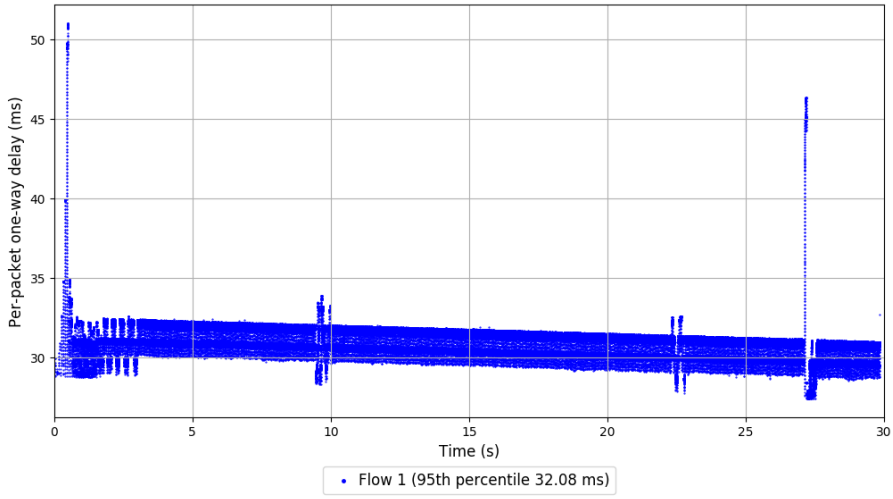
```
Run 2: Statistics of Indigo

Start at: 2018-08-31 06:42:41
End at: 2018-08-31 06:43:11
Local clock offset: -9.921 ms
Remote clock offset: -2.358 ms

# Below is generated by plot.py at 2018-08-31 06:52:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.62 Mbit/s
95th percentile per-packet one-way delay: 32.075 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 95.62 Mbit/s
95th percentile per-packet one-way delay: 32.075 ms
Loss rate: 0.02%
```

Run 2: Report of Indigo — Data Link



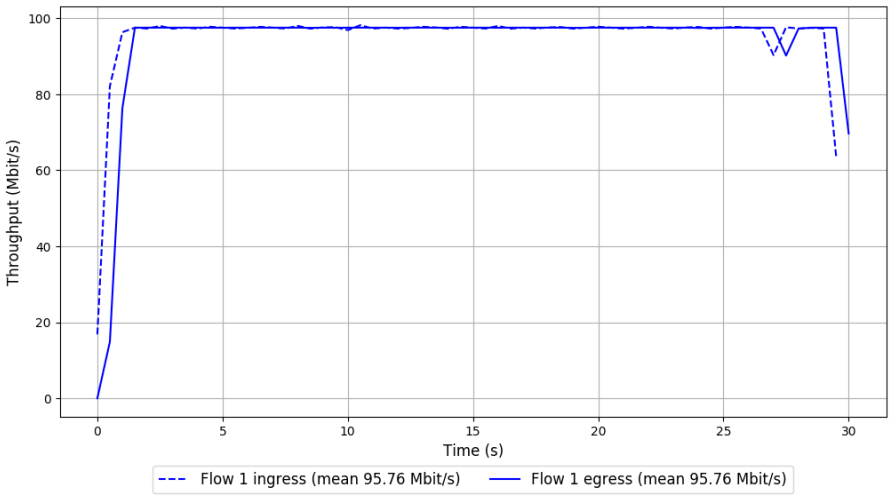


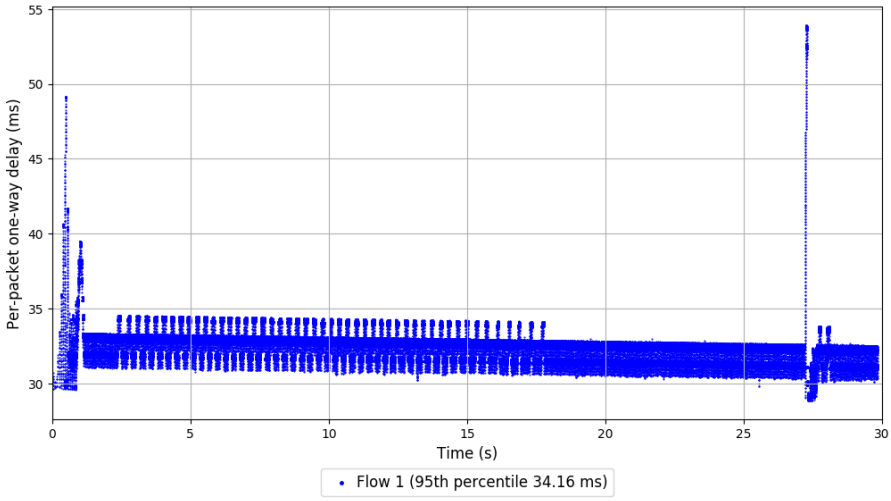
```
Run 3: Statistics of Indigo

Start at: 2018-08-31 06:47:54
End at: 2018-08-31 06:48:24
Local clock offset: -10.951 ms
Remote clock offset: -2.366 ms

# Below is generated by plot.py at 2018-08-31 06:52:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.76 Mbit/s
95th percentile per-packet one-way delay: 34.164 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 95.76 Mbit/s
95th percentile per-packet one-way delay: 34.164 ms
Loss rate: 0.00%
```

Run 3: Report of Indigo — Data Link

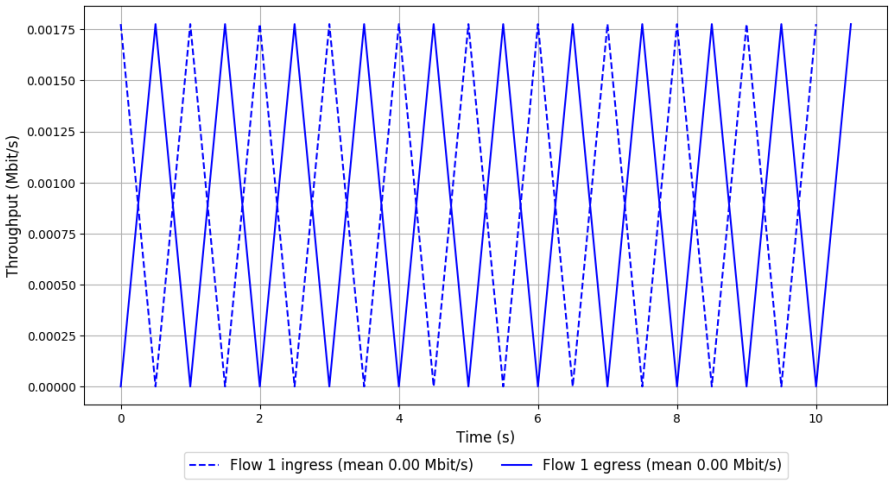


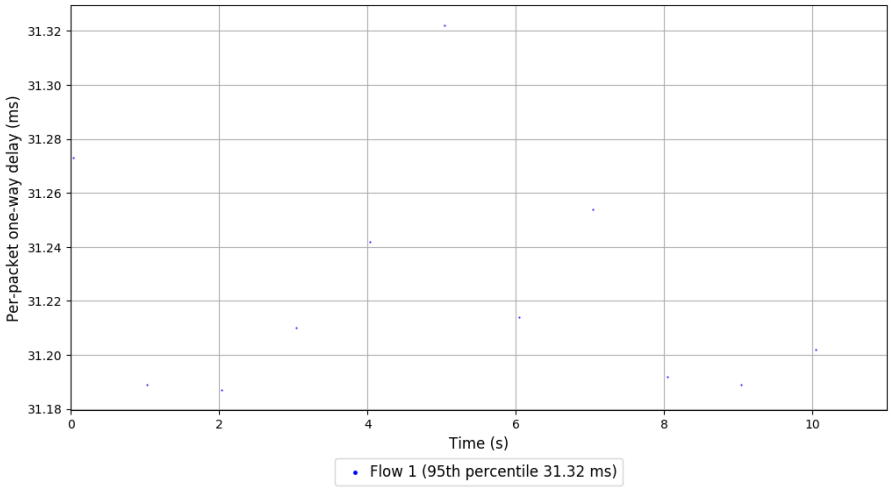


```
Run 1: Statistics of Muses-25

Start at: 2018-08-31 06:40:08
End at: 2018-08-31 06:40:38
Local clock offset: -7.271 ms
Remote clock offset: -2.191 ms
```

Run 1: Report of Muses-25 — Data Link

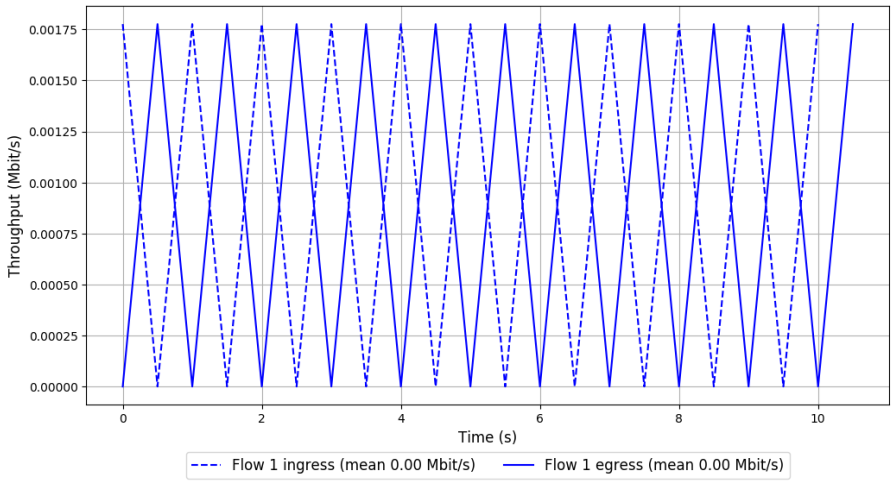


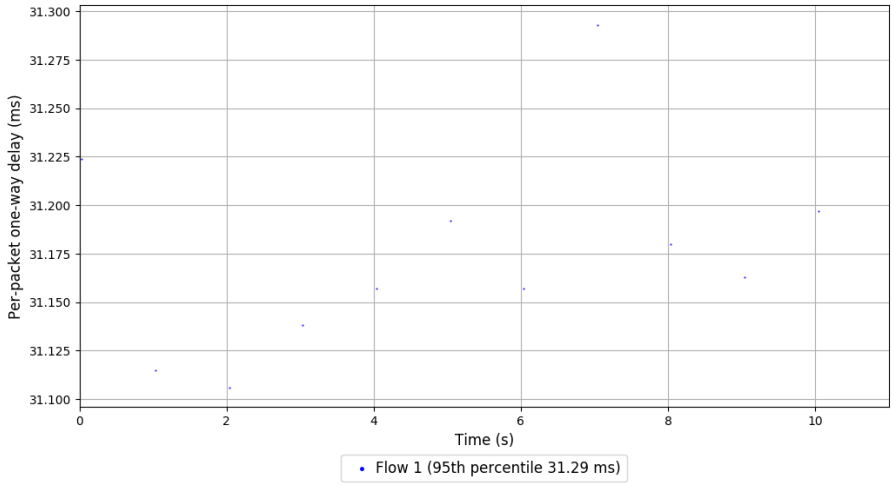


```
Run 2: Statistics of Muses-25

Start at: 2018-08-31 06:45:20
End at: 2018-08-31 06:45:50
Local clock offset: -10.275 ms
Remote clock offset: -2.107 ms
```

Run 2: Report of Muses-25 — Data Link





```
Run 3: Statistics of Muses-25

Start at: 2018-08-31 06:50:33
End at: 2018-08-31 06:51:03
Local clock offset: -15.972 ms
Remote clock offset: -2.202 ms
```

Run 3: Report of Muses-25 — Data Link