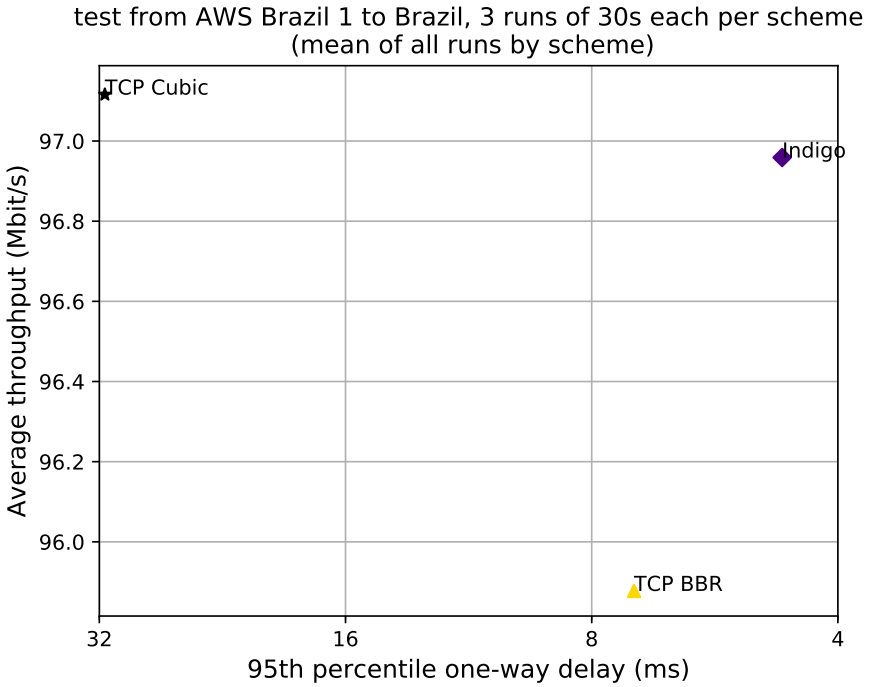
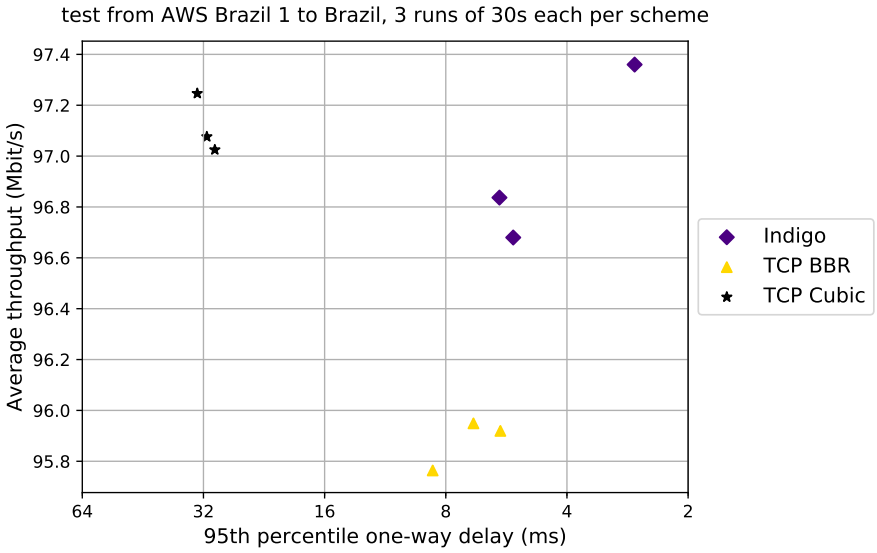
Pantheon Report

Generated at 2018-08-31 04:32:05 (UTC).
Data path: AWS Brazil 1 on `ens5` (*local*) →Brazil on `p4p1` (*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 `gps.ntp.br` 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 Brazil 1 to Brazil, 3 runs of 30s each per scheme
(mean of all runs by scheme)
TCP Cubic
Indigo
TCP BBR
Average throughput (Mbit/s)
97.0
96.8
96.6
96.4
96.2
96.0
32
16
8
4
95th percentile one-way delay (ms)


test from AWS Brazil 1 to Brazil, 3 runs of 30s each per scheme
Average throughput (Mbit/s)
97.4
97.2
97.0
96.8
96.6
96.4
96.2
96.0
95.8
64
32
16
8
4
2
95th percentile one-way delay (ms)
Indigo
TCP BBR
TCP Cubic

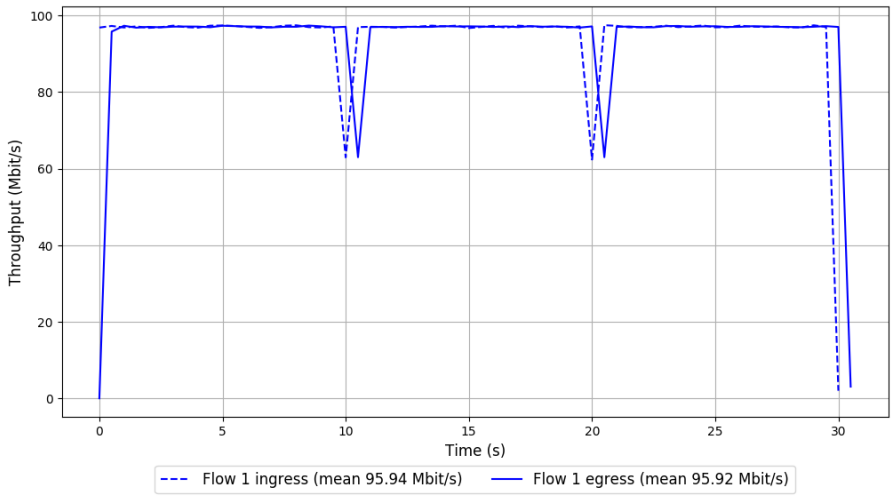
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	95.88	7.10	0.00
TCP Cubic	3	97.12	31.51	0.01
Indigo	3	96.96	4.68	0.00
Muses-25	0	N/A	N/A	N/A

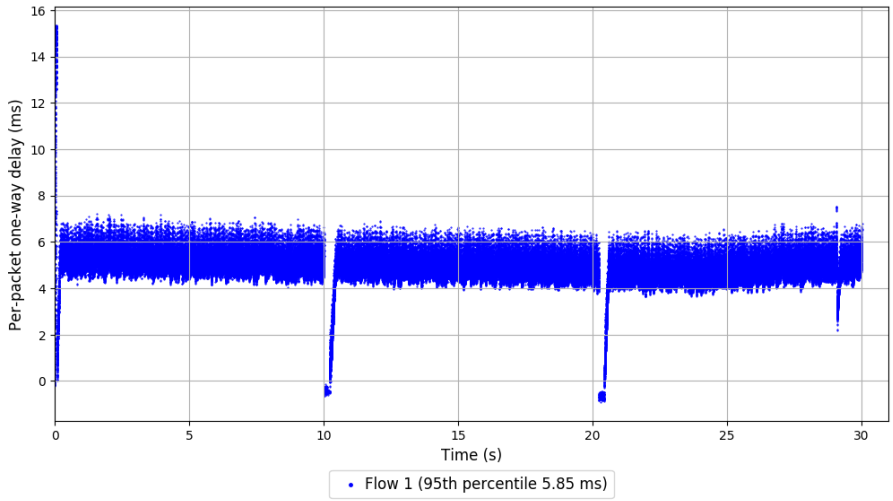
```
Run 1: Statistics of TCP BBR

Start at: 2018-08-31 04:17:51
End at: 2018-08-31 04:18:21
Local clock offset: -2.298 ms
Remote clock offset: 0.179 ms

# Below is generated by plot.py at 2018-08-31 04:31:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.92 Mbit/s
95th percentile per-packet one-way delay: 5.854 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 95.92 Mbit/s
95th percentile per-packet one-way delay: 5.854 ms
Loss rate: 0.00%
```

Run 1: Report of TCP BBR — Data Link



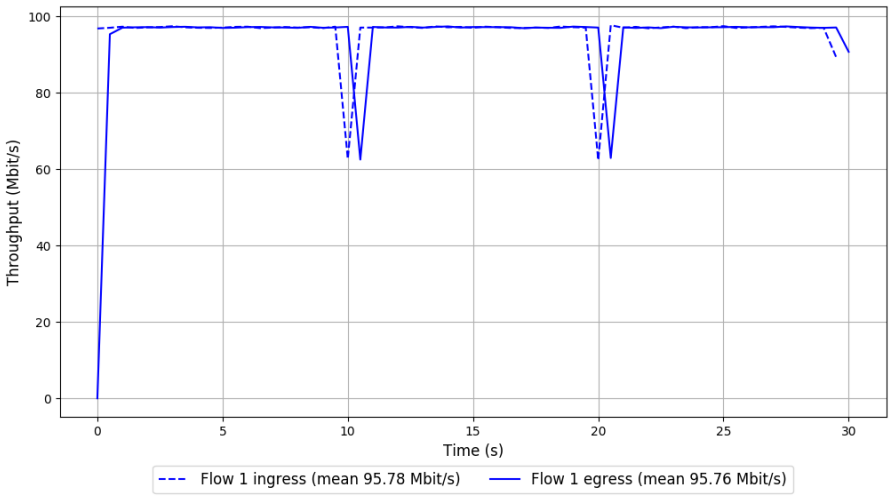


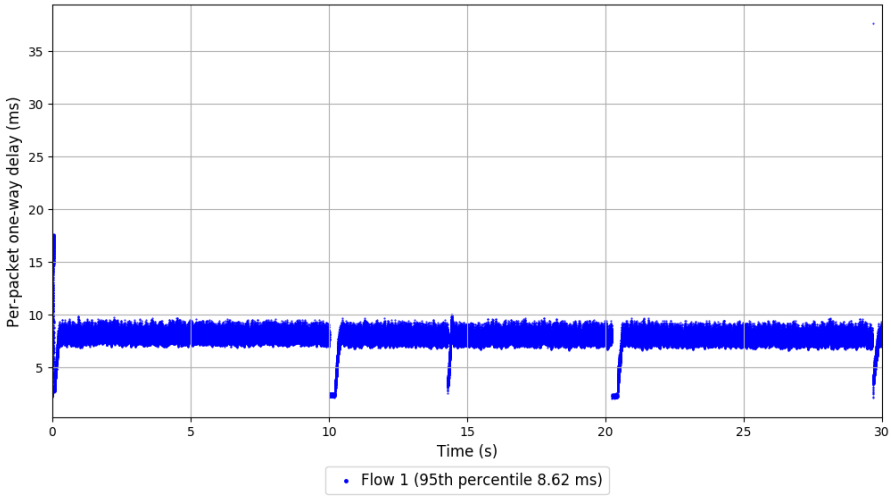
```
Run 2: Statistics of TCP BBR

Start at: 2018-08-31 04:22:17
End at: 2018-08-31 04:22:47
Local clock offset: -4.23 ms
Remote clock offset: 0.254 ms

# Below is generated by plot.py at 2018-08-31 04:31:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.76 Mbit/s
95th percentile per-packet one-way delay: 8.622 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 95.76 Mbit/s
95th percentile per-packet one-way delay: 8.622 ms
Loss rate: 0.00%
```

Run 2: Report of TCP BBR — Data Link



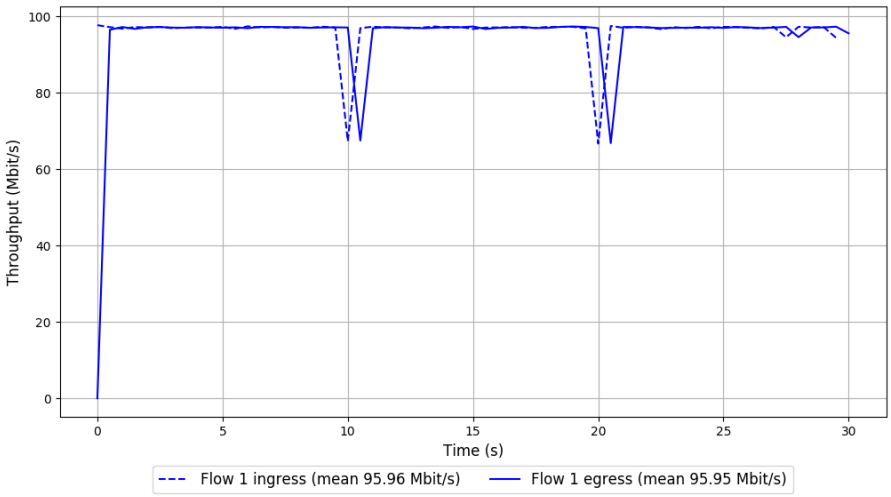


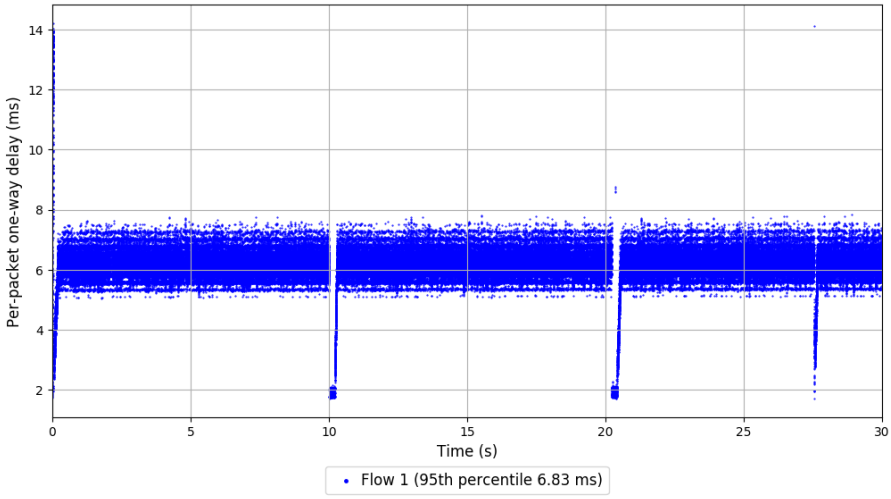
```
Run 3: Statistics of TCP BBR

Start at: 2018-08-31 04:26:43
End at: 2018-08-31 04:27:13
Local clock offset: -5.241 ms
Remote clock offset: 0.248 ms

# Below is generated by plot.py at 2018-08-31 04:31:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.95 Mbit/s
95th percentile per-packet one-way delay: 6.829 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 95.95 Mbit/s
95th percentile per-packet one-way delay: 6.829 ms
Loss rate: 0.00%
```

Run 3: Report of TCP BBR — Data Link



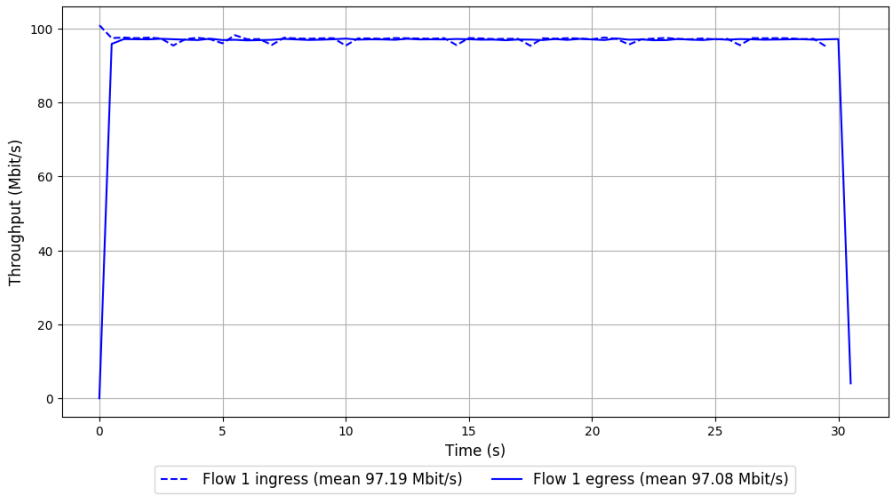


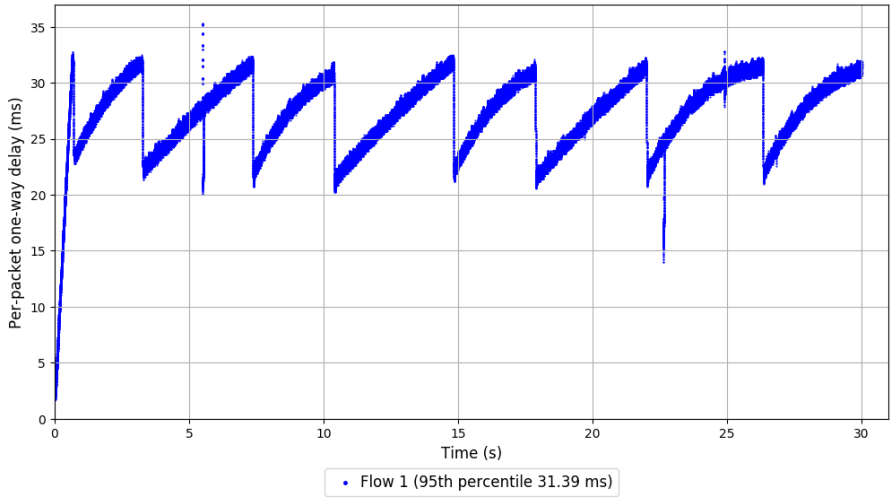
```
Run 1: Statistics of TCP Cubic

Start at: 2018-08-31 04:18:58
End at: 2018-08-31 04:19:28
Local clock offset: -4.628 ms
Remote clock offset: 0.244 ms

# Below is generated by plot.py at 2018-08-31 04:31:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 97.08 Mbit/s
95th percentile per-packet one-way delay: 31.389 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 97.08 Mbit/s
95th percentile per-packet one-way delay: 31.389 ms
Loss rate: 0.02%
```

Run 1: Report of TCP Cubic — Data Link



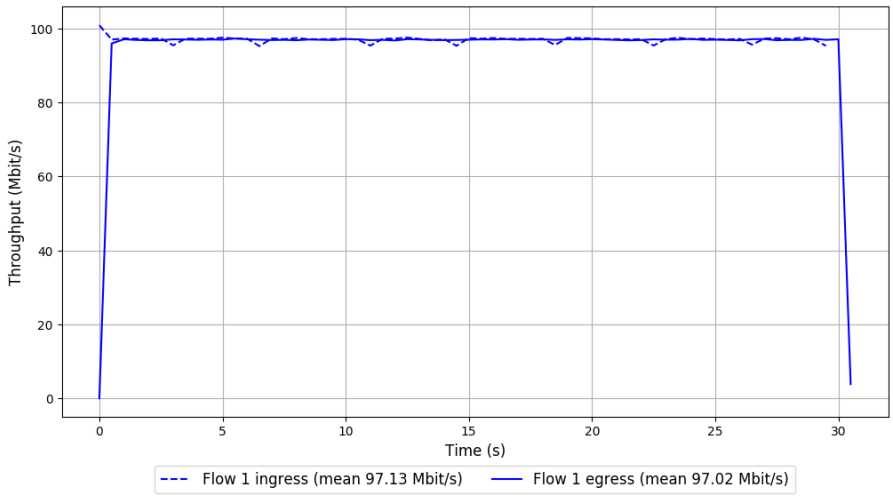


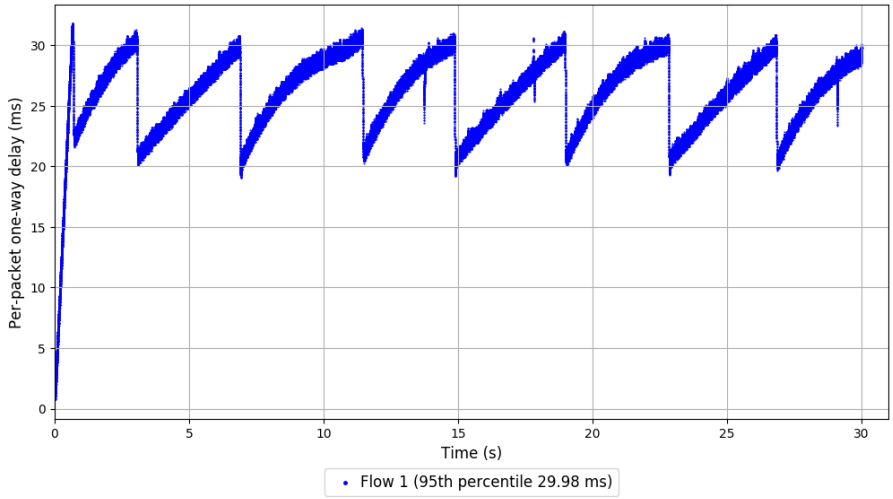
```
Run 2: Statistics of TCP Cubic

Start at: 2018-08-31 04:23:24
End at: 2018-08-31 04:23:54
Local clock offset: -4.599 ms
Remote clock offset: 0.278 ms

# Below is generated by plot.py at 2018-08-31 04:31:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 97.02 Mbit/s
95th percentile per-packet one-way delay: 29.985 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 97.02 Mbit/s
95th percentile per-packet one-way delay: 29.985 ms
Loss rate: 0.01%
```

Run 2: Report of TCP Cubic — Data Link



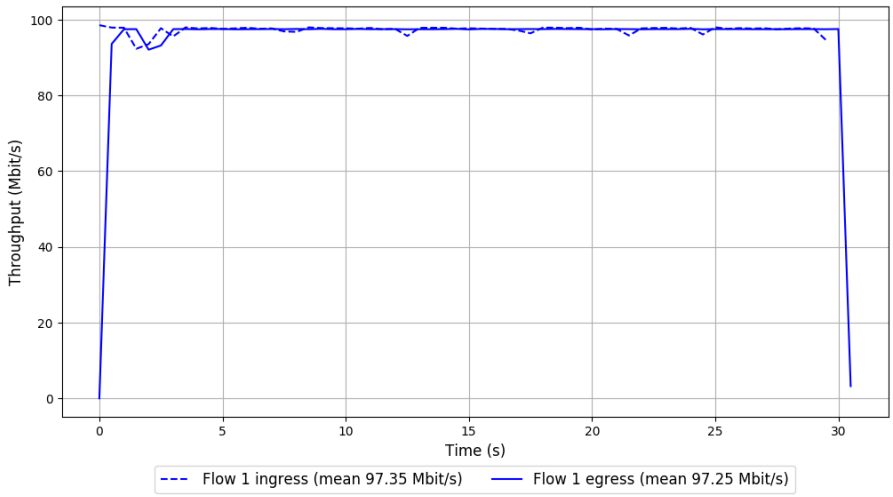


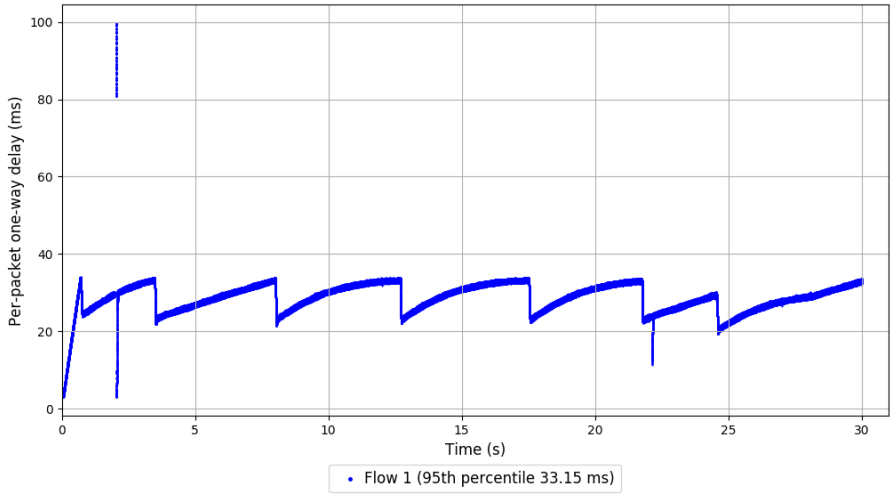
```
Run 3: Statistics of TCP Cubic

Start at: 2018-08-31 04:27:50
End at: 2018-08-31 04:28:20
Local clock offset: -5.115 ms
Remote clock offset: 0.233 ms

# Below is generated by plot.py at 2018-08-31 04:31:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 97.25 Mbit/s
95th percentile per-packet one-way delay: 33.149 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 97.25 Mbit/s
95th percentile per-packet one-way delay: 33.149 ms
Loss rate: 0.01%
```

Run 3: Report of TCP Cubic — Data Link



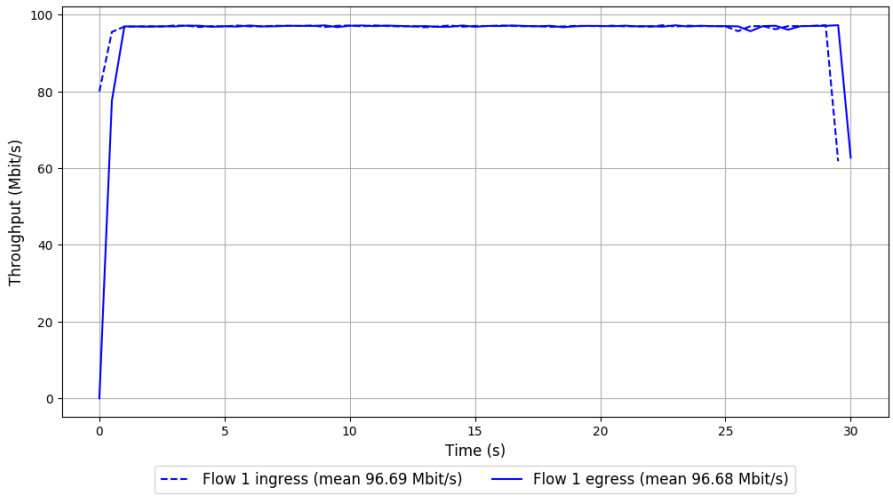


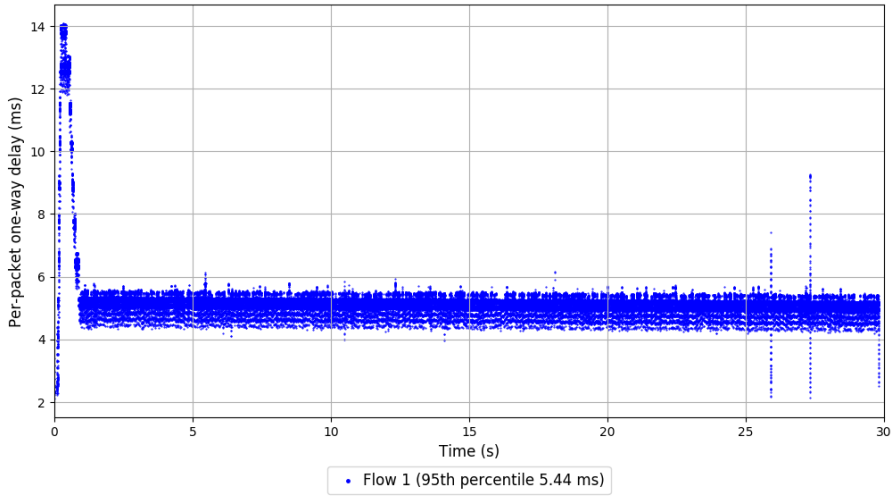
```
Run 1: Statistics of Indigo

Start at: 2018-08-31 04:21:08
End at: 2018-08-31 04:21:38
Local clock offset: -3.897 ms
Remote clock offset: 0.254 ms

# Below is generated by plot.py at 2018-08-31 04:31:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.68 Mbit/s
95th percentile per-packet one-way delay: 5.439 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 96.68 Mbit/s
95th percentile per-packet one-way delay: 5.439 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo — Data Link



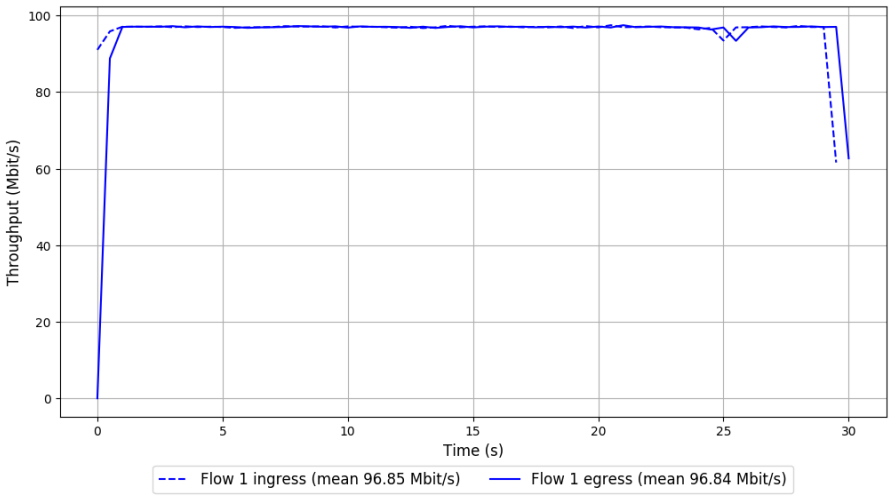


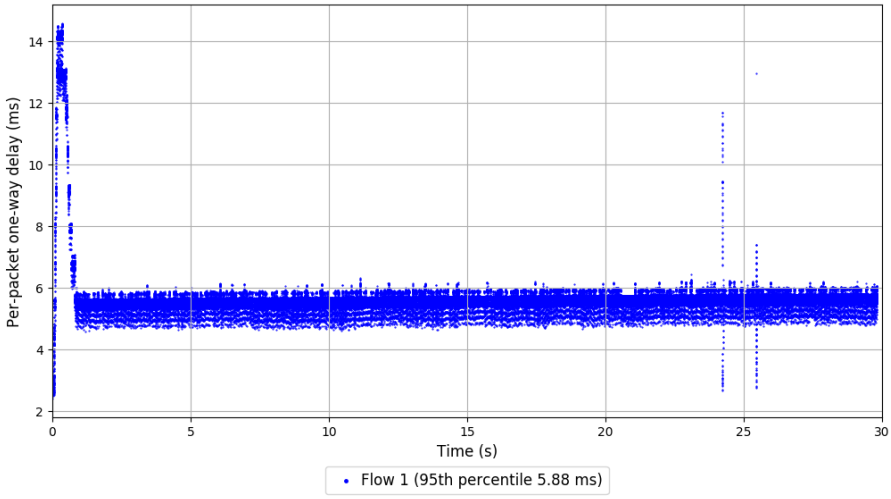
```
Run 2: Statistics of Indigo

Start at: 2018-08-31 04:25:35
End at: 2018-08-31 04:26:05
Local clock offset: -4.992 ms
Remote clock offset: 0.198 ms

# Below is generated by plot.py at 2018-08-31 04:32:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.84 Mbit/s
95th percentile per-packet one-way delay: 5.885 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 96.84 Mbit/s
95th percentile per-packet one-way delay: 5.885 ms
Loss rate: 0.00%
```

Run 2: Report of Indigo — Data Link



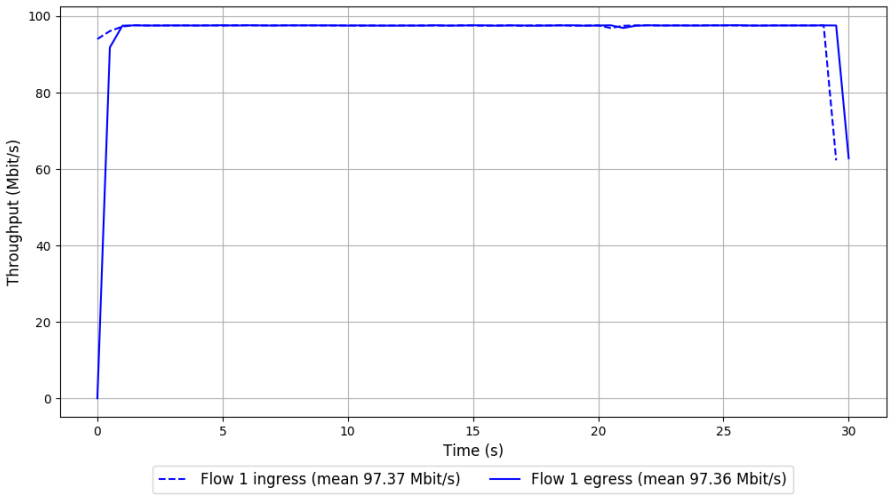


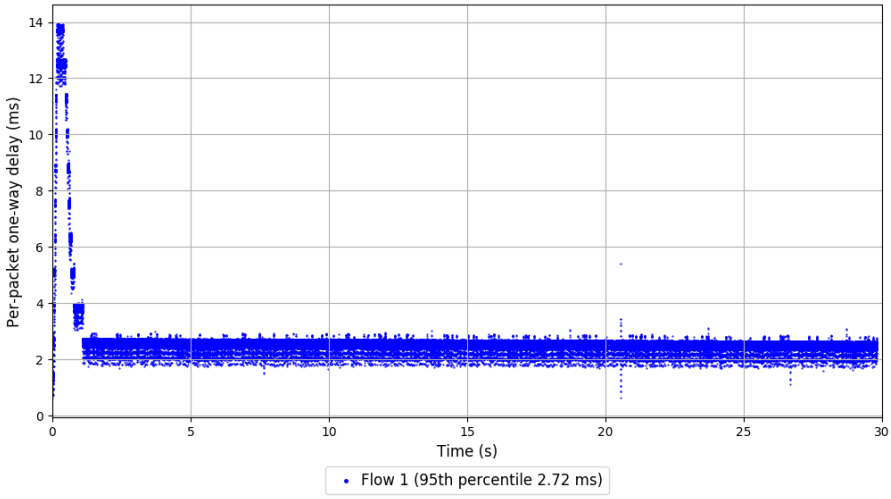
```
Run 3: Statistics of Indigo

Start at: 2018-08-31 04:30:01
End at: 2018-08-31 04:30:31
Local clock offset: -4.574 ms
Remote clock offset: 0.168 ms

# Below is generated by plot.py at 2018-08-31 04:32:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 97.36 Mbit/s
95th percentile per-packet one-way delay: 2.716 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 97.36 Mbit/s
95th percentile per-packet one-way delay: 2.716 ms
Loss rate: 0.00%
```

Run 3: Report of Indigo — Data Link

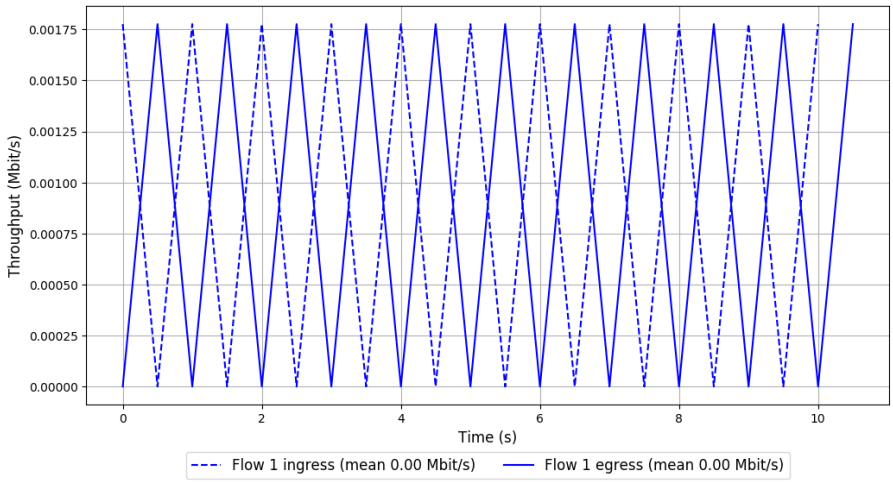


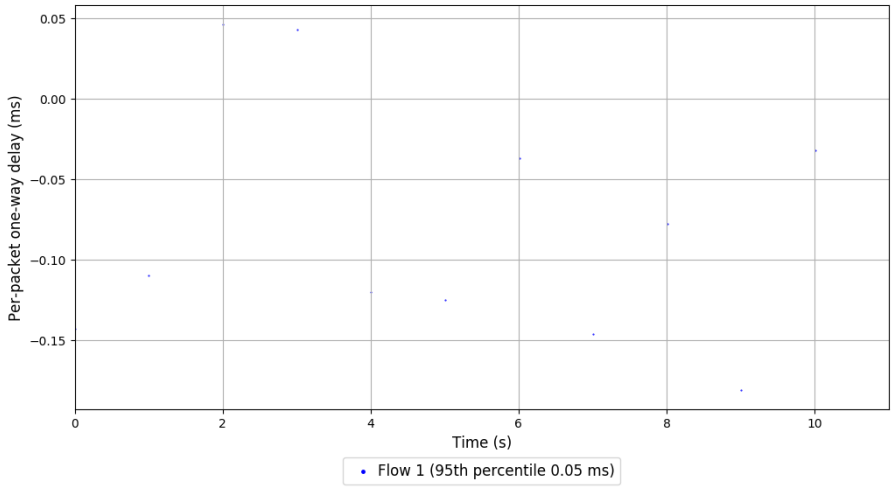


```
Run 1: Statistics of Muses-25

Start at: 2018-08-31 04:20:05
End at: 2018-08-31 04:20:35
Local clock offset: -2.88 ms
Remote clock offset: 0.272 ms
```

Run 1: Report of Muses-25 — Data Link

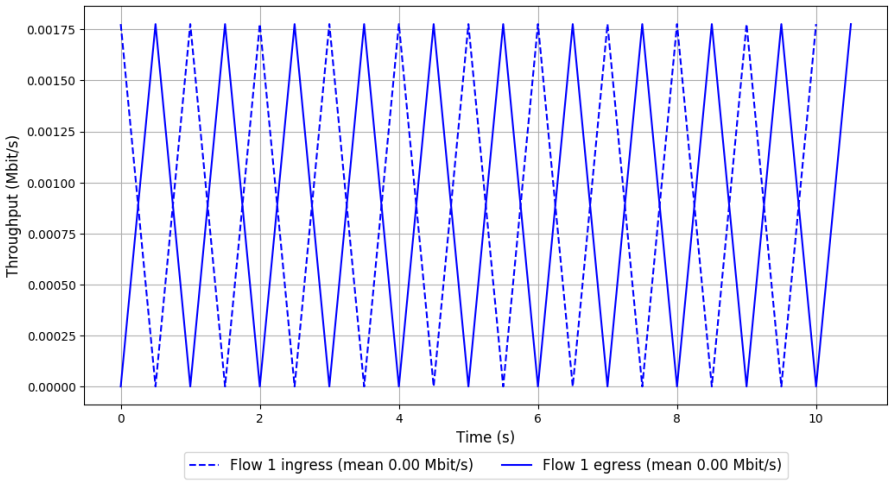


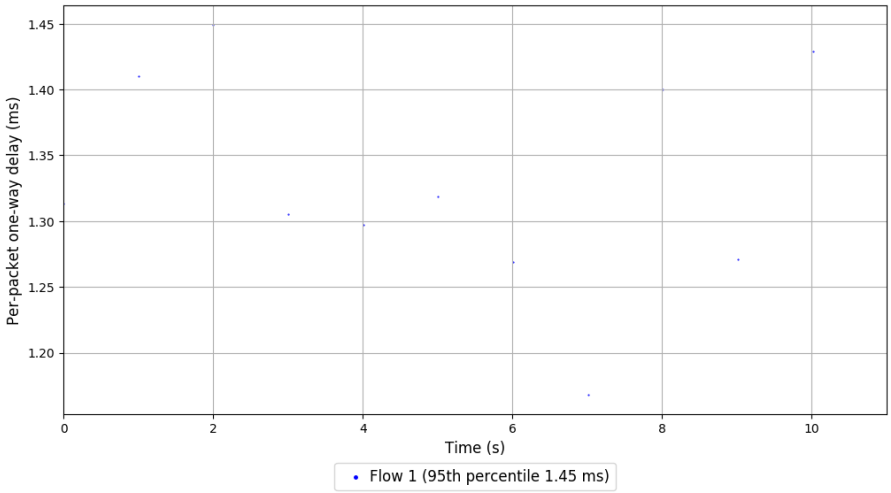


```
Run 2: Statistics of Muses-25

Start at: 2018-08-31 04:24:31
End at: 2018-08-31 04:25:01
Local clock offset: -5.825 ms
Remote clock offset: 0.237 ms
```

Run 2: Report of Muses-25 — Data Link





```
Run 3: Statistics of Muses-25

Start at: 2018-08-31 04:28:57
End at: 2018-08-31 04:29:27
Local clock offset: -3.643 ms
Remote clock offset: 0.262 ms
```

Run 3: Report of Muses-25 — Data Link