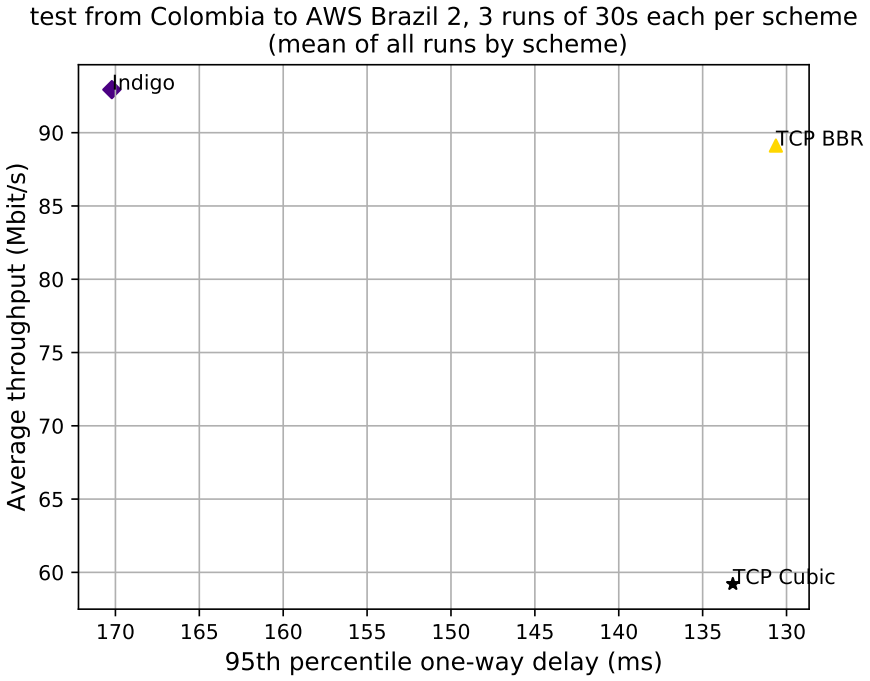
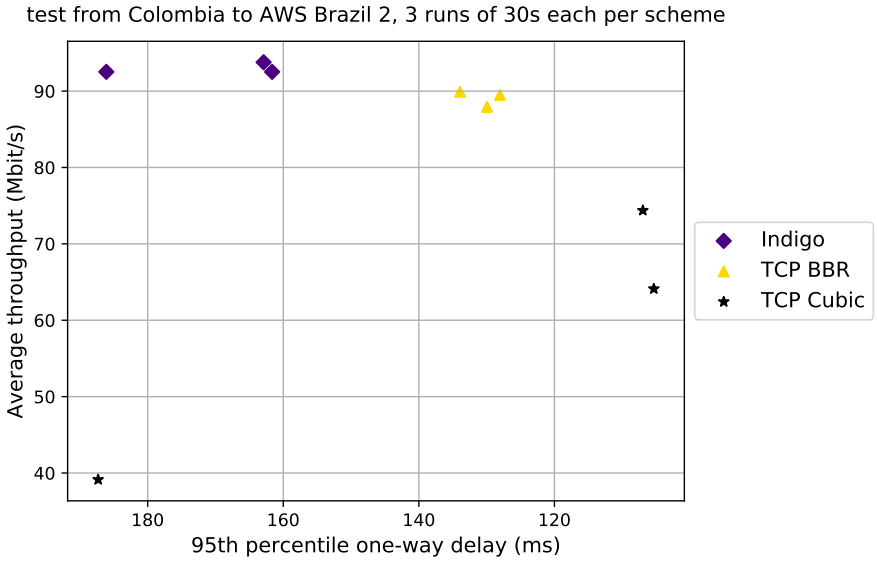
Pantheon Report

Generated at 2018-08-31 05:24:38 (UTC).
Data path: Colombia on `p4p1` (*remote*) →AWS Brazil 2 on `ens5` (*local*).
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 Colombia to AWS Brazil 2, 3 runs of 30s each per scheme
(mean of all runs by scheme)
Indigo
TCP BBR
TCP Cubic
Average throughput (Mbit/s)
95th percentile one-way delay (ms)
90
85
80
75
70
65
60
170
165
160
155
150
145
140
135
130


test from Colombia to AWS Brazil 2, 3 runs of 30s each per scheme
Average throughput (Mbit/s)
95th percentile one-way delay (ms)
Indigo
TCP BBR
TCP Cubic
90
80
70
60
50
40
180
160
140
120

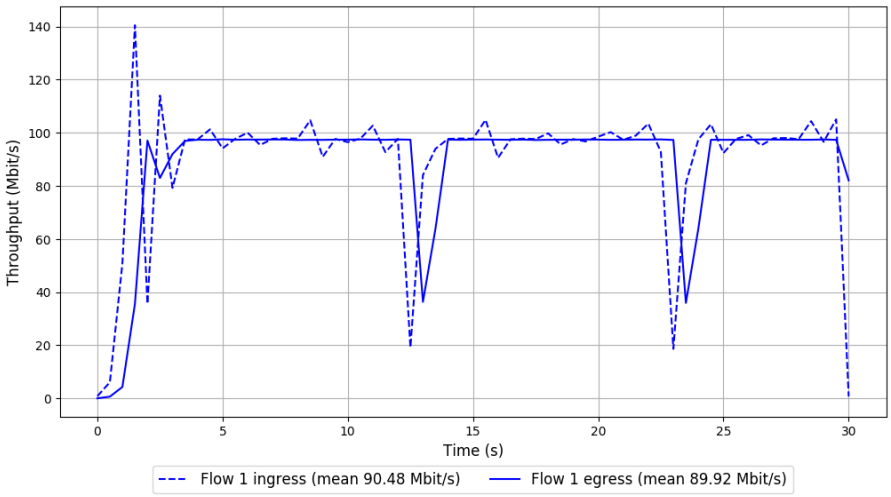
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	89.12	130.63	1.38
TCP Cubic	3	59.20	133.20	1.07
Indigo	3	92.94	170.21	2.51
Muses-25	0	N/A	N/A	N/A

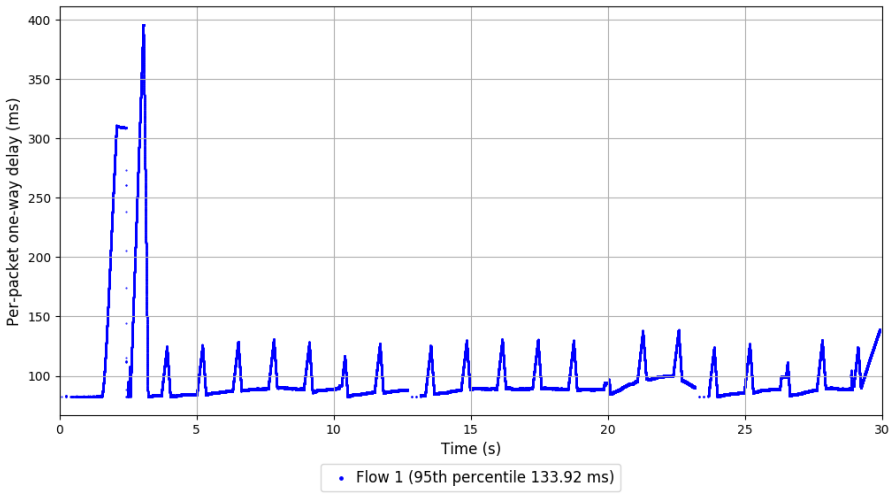
```
Run 1: Statistics of TCP BBR

Start at: 2018-08-31 05:11:01
End at: 2018-08-31 05:11:31
Local clock offset: -8.826 ms
Remote clock offset: -0.721 ms

# Below is generated by plot.py at 2018-08-31 05:24:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.92 Mbit/s
95th percentile per-packet one-way delay: 133.922 ms
Loss rate: 1.16%
-- Flow 1:
Average throughput: 89.92 Mbit/s
95th percentile per-packet one-way delay: 133.922 ms
Loss rate: 1.16%
```

Run 1: Report of TCP BBR — Data Link



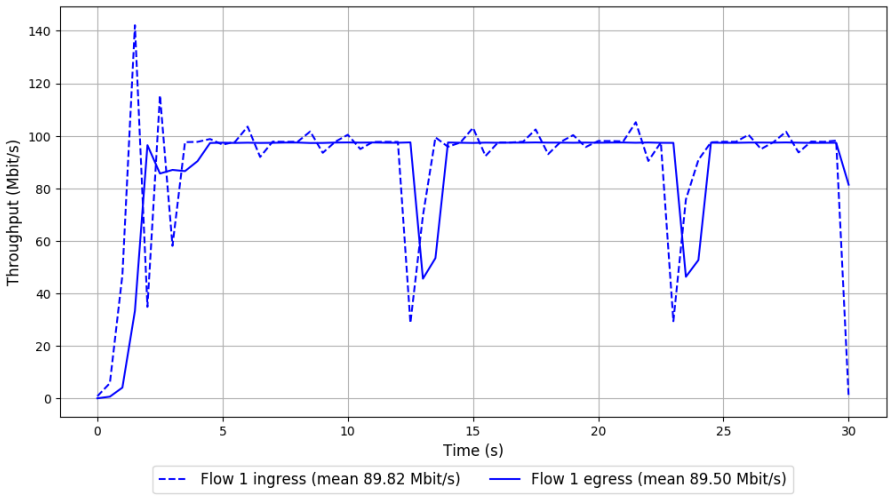


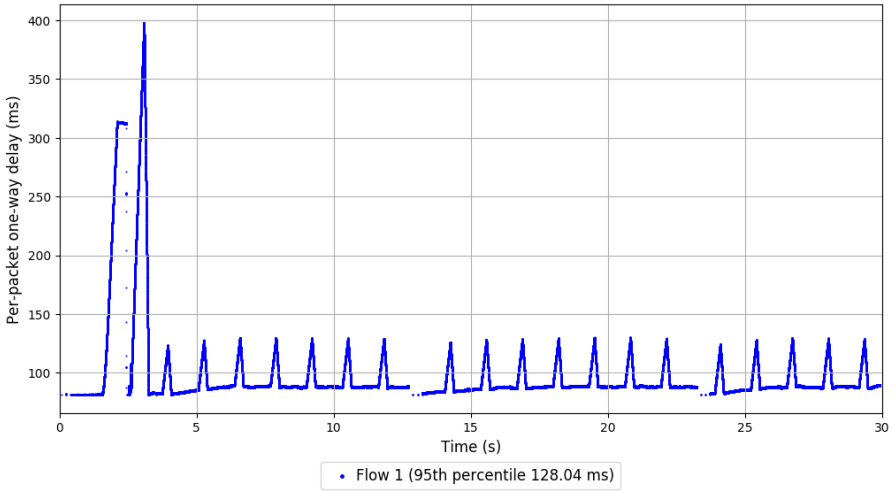
```
Run 2: Statistics of TCP BBR

Start at: 2018-08-31 05:15:42
End at: 2018-08-31 05:16:12
Local clock offset: -9.73 ms
Remote clock offset: 1.915 ms

# Below is generated by plot.py at 2018-08-31 05:24:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.50 Mbit/s
95th percentile per-packet one-way delay: 128.036 ms
Loss rate: 0.90%
-- Flow 1:
Average throughput: 89.50 Mbit/s
95th percentile per-packet one-way delay: 128.036 ms
Loss rate: 0.90%
```

Run 2: Report of TCP BBR — Data Link



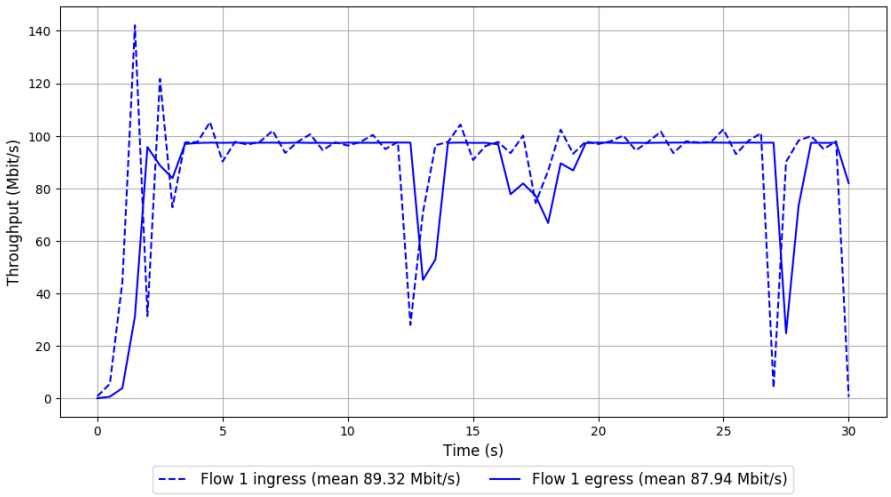


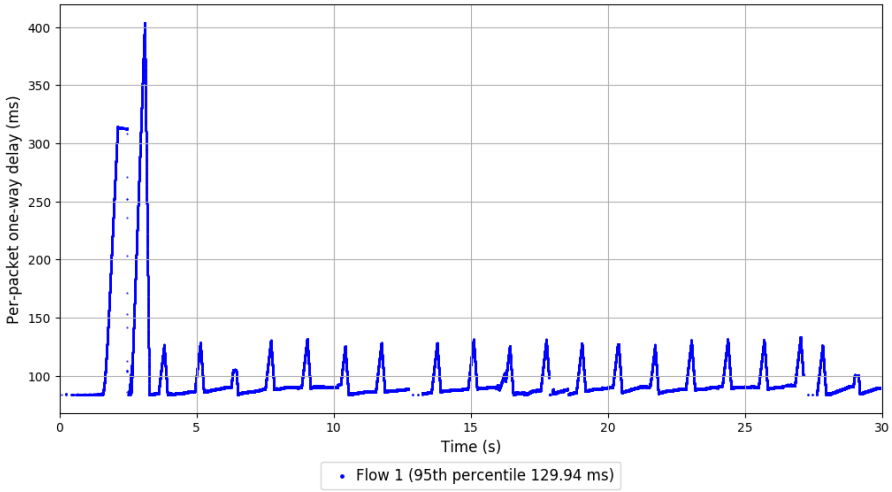
```
Run 3: Statistics of TCP BBR

Start at: 2018-08-31 05:20:23
End at: 2018-08-31 05:20:53
Local clock offset: -6.952 ms
Remote clock offset: -1.07 ms

# Below is generated by plot.py at 2018-08-31 05:24:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.94 Mbit/s
95th percentile per-packet one-way delay: 129.945 ms
Loss rate: 2.08%
-- Flow 1:
Average throughput: 87.94 Mbit/s
95th percentile per-packet one-way delay: 129.945 ms
Loss rate: 2.08%
```

Run 3: Report of TCP BBR — Data Link



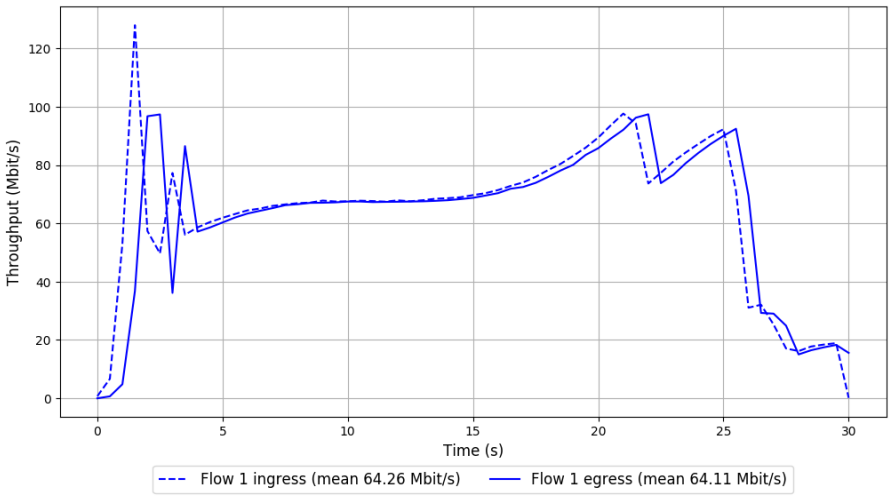


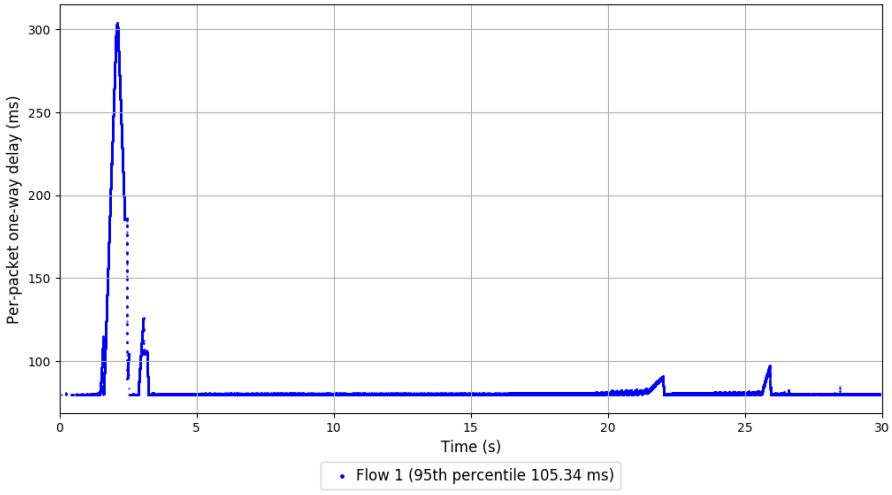
```
Run 1: Statistics of TCP Cubic

Start at: 2018-08-31 05:12:13
End at: 2018-08-31 05:12:43
Local clock offset: -9.053 ms
Remote clock offset: 2.184 ms

# Below is generated by plot.py at 2018-08-31 05:24:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 64.11 Mbit/s
95th percentile per-packet one-way delay: 105.340 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 64.11 Mbit/s
95th percentile per-packet one-way delay: 105.340 ms
Loss rate: 0.77%
```

Run 1: Report of TCP Cubic — Data Link



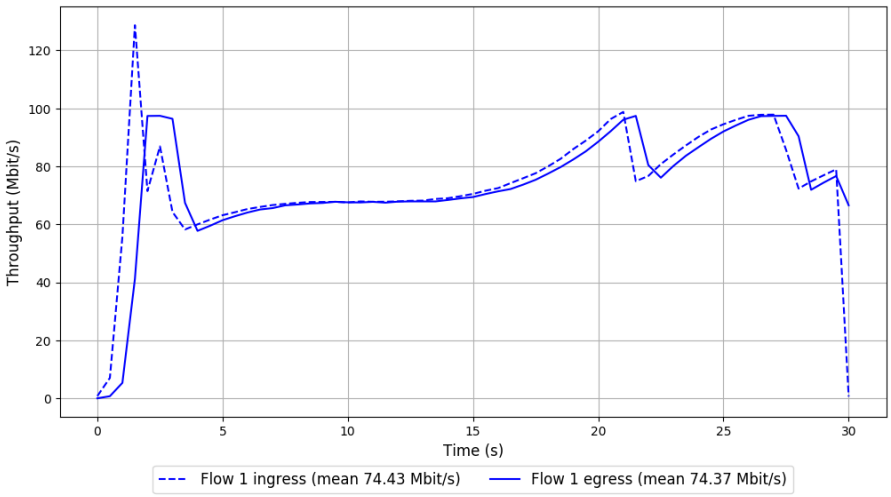


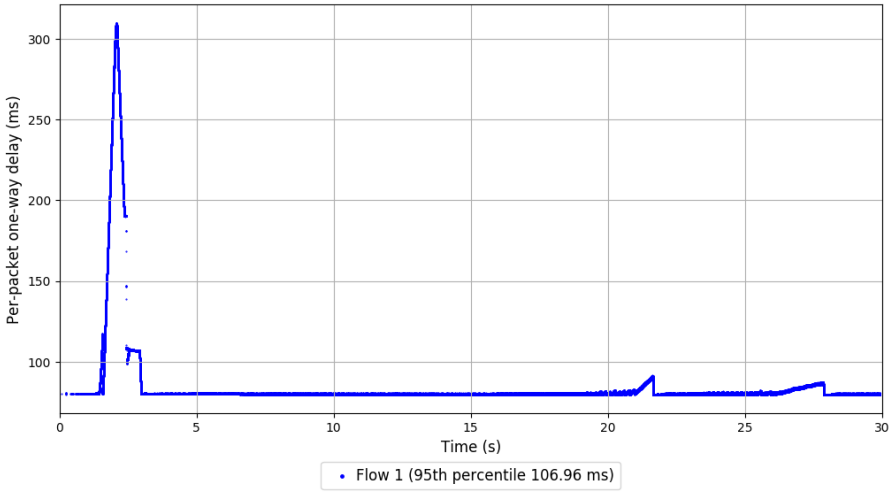
```
Run 2: Statistics of TCP Cubic

Start at: 2018-08-31 05:16:54
End at: 2018-08-31 05:17:24
Local clock offset: -11.086 ms
Remote clock offset: -1.027 ms

# Below is generated by plot.py at 2018-08-31 05:24:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 74.37 Mbit/s
95th percentile per-packet one-way delay: 106.957 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 74.37 Mbit/s
95th percentile per-packet one-way delay: 106.957 ms
Loss rate: 0.61%
```

Run 2: Report of TCP Cubic — Data Link



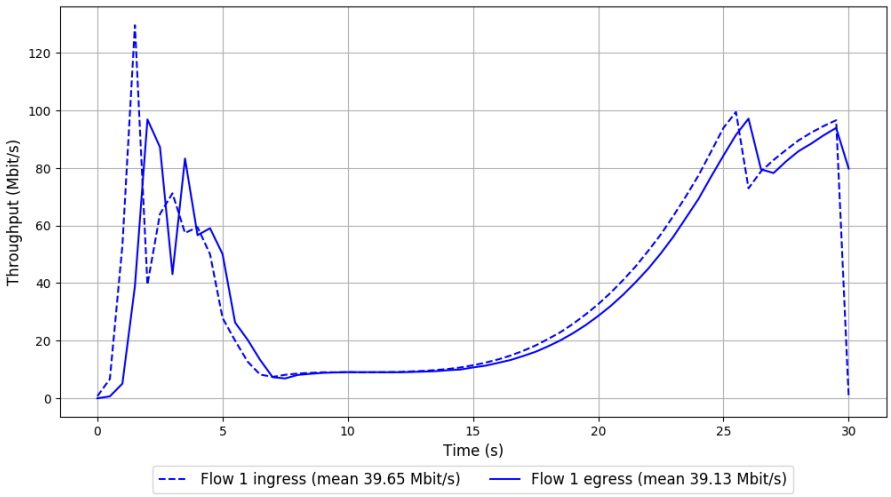


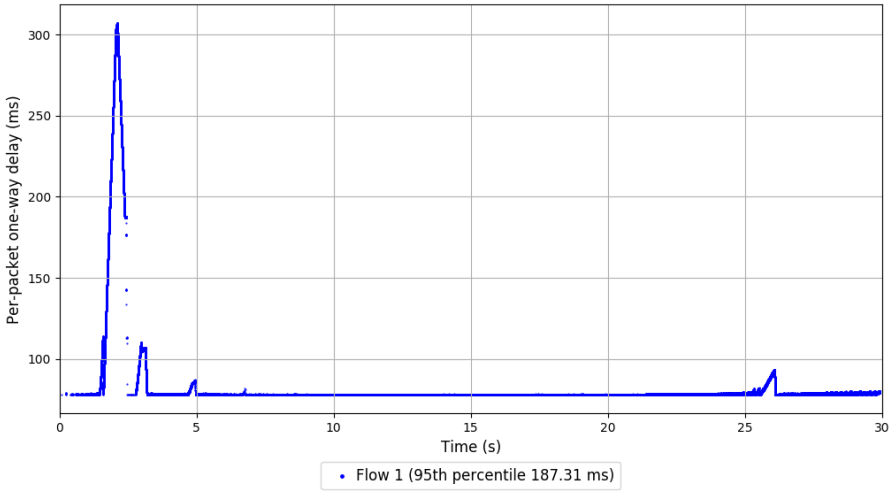
```
Run 3: Statistics of TCP Cubic

Start at: 2018-08-31 05:21:34
End at: 2018-08-31 05:22:04
Local clock offset: -7.875 ms
Remote clock offset: 3.803 ms

# Below is generated by plot.py at 2018-08-31 05:24:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 39.13 Mbit/s
95th percentile per-packet one-way delay: 187.305 ms
Loss rate: 1.84%
-- Flow 1:
Average throughput: 39.13 Mbit/s
95th percentile per-packet one-way delay: 187.305 ms
Loss rate: 1.84%
```

Run 3: Report of TCP Cubic — Data Link



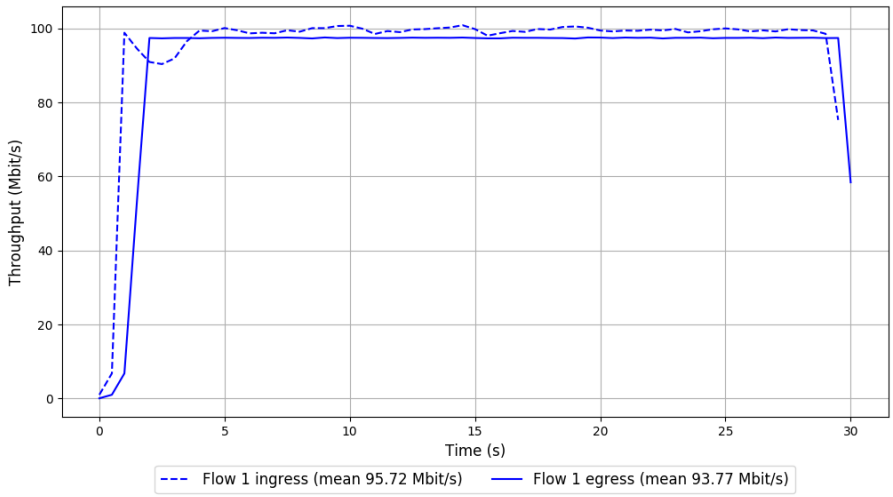


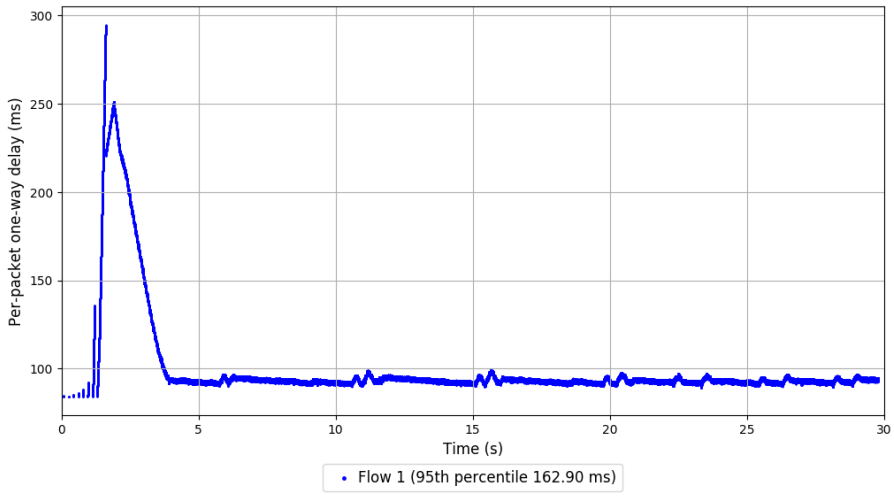
```
Run 1: Statistics of Indigo

Start at: 2018-08-31 05:09:48
End at: 2018-08-31 05:10:18
Local clock offset: -8.579 ms
Remote clock offset: -0.513 ms

# Below is generated by plot.py at 2018-08-31 05:24:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 93.77 Mbit/s
95th percentile per-packet one-way delay: 162.896 ms
Loss rate: 2.57%
-- Flow 1:
Average throughput: 93.77 Mbit/s
95th percentile per-packet one-way delay: 162.896 ms
Loss rate: 2.57%
```

Run 1: Report of Indigo — Data Link



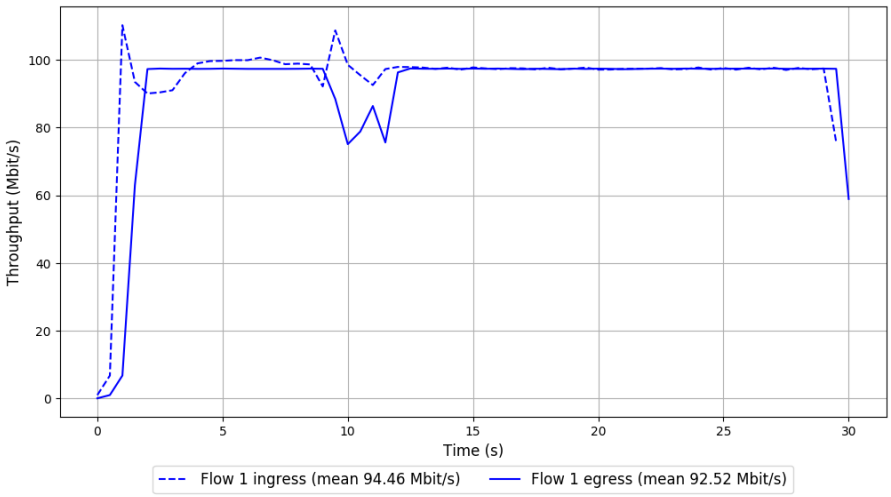


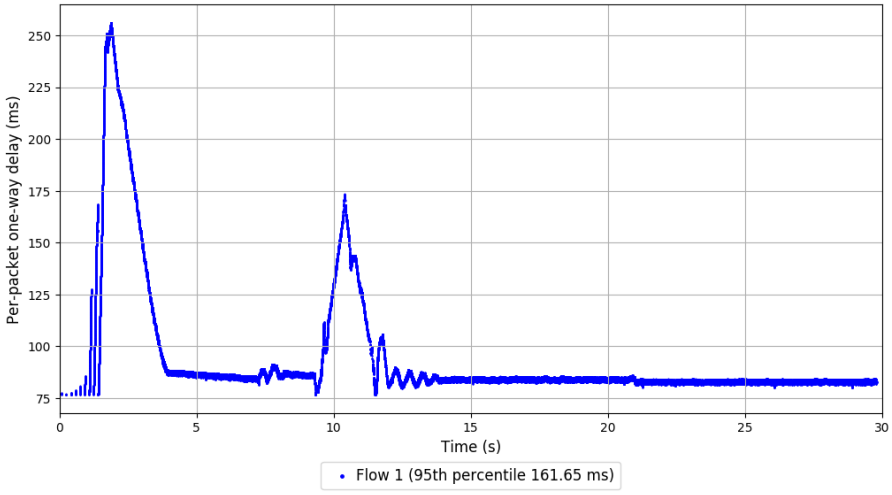
```
Run 2: Statistics of Indigo

Start at: 2018-08-31 05:14:29
End at: 2018-08-31 05:14:59
Local clock offset: -11.091 ms
Remote clock offset: 3.009 ms

# Below is generated by plot.py at 2018-08-31 05:24:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.52 Mbit/s
95th percentile per-packet one-way delay: 161.646 ms
Loss rate: 2.59%
-- Flow 1:
Average throughput: 92.52 Mbit/s
95th percentile per-packet one-way delay: 161.646 ms
Loss rate: 2.59%
```

Run 2: Report of Indigo — Data Link



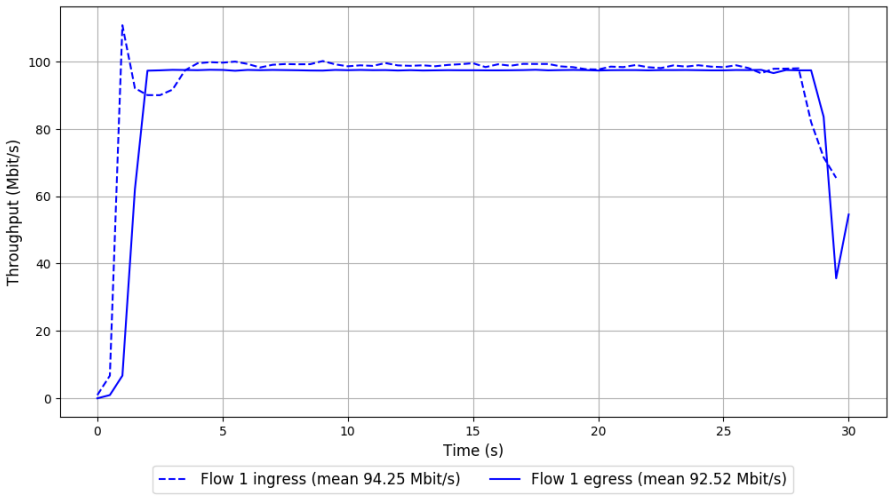


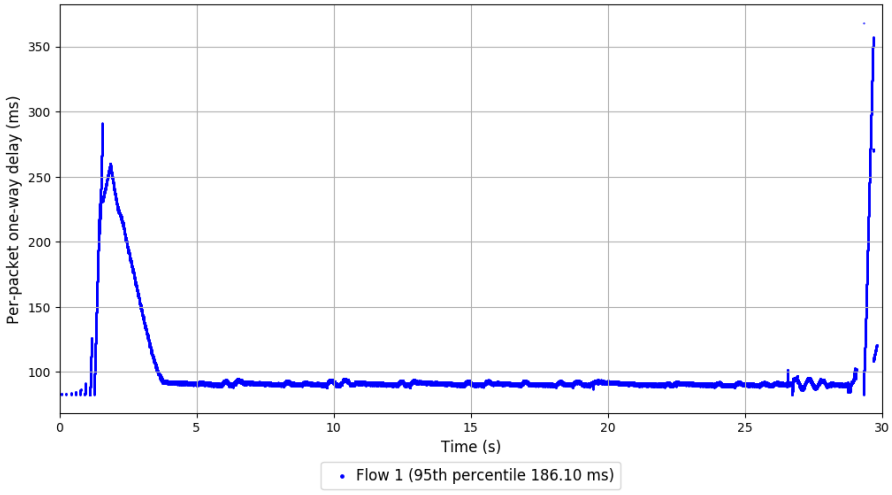
```
Run 3: Statistics of Indigo

Start at: 2018-08-31 05:19:10
End at: 2018-08-31 05:19:40
Local clock offset: -8.498 ms
Remote clock offset: -1.089 ms

# Below is generated by plot.py at 2018-08-31 05:24:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.52 Mbit/s
95th percentile per-packet one-way delay: 186.100 ms
Loss rate: 2.38%
-- Flow 1:
Average throughput: 92.52 Mbit/s
95th percentile per-packet one-way delay: 186.100 ms
Loss rate: 2.38%
```

Run 3: Report of Indigo — Data Link

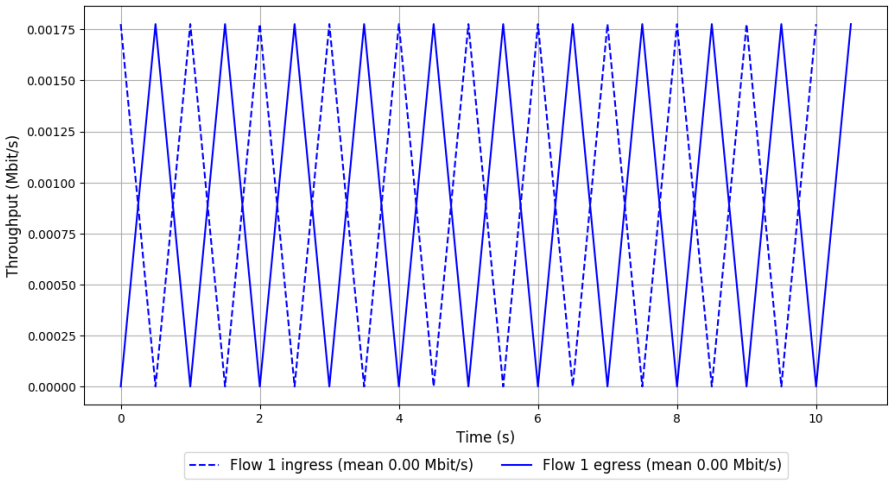


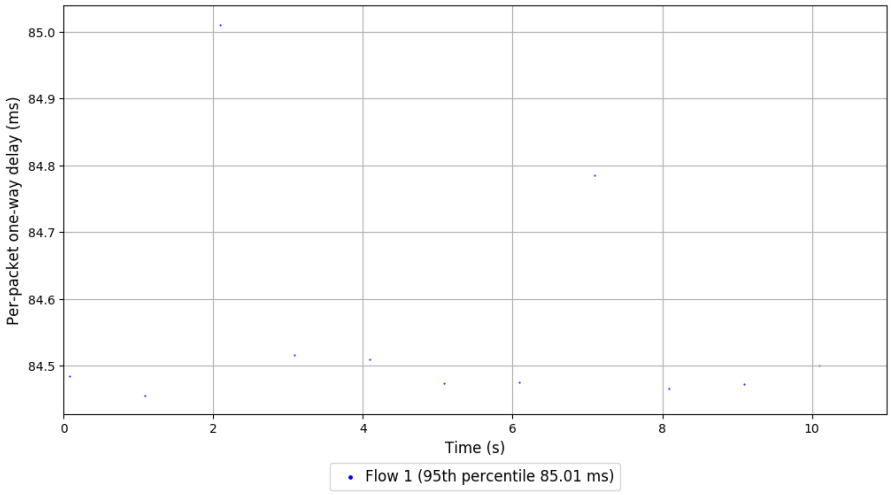


```
Run 1: Statistics of Muses-25

Start at: 2018-08-31 05:13:23
End at: 2018-08-31 05:13:53
Local clock offset: -10.066 ms
Remote clock offset: -1.884 ms
```

Run 1: Report of Muses-25 — Data Link

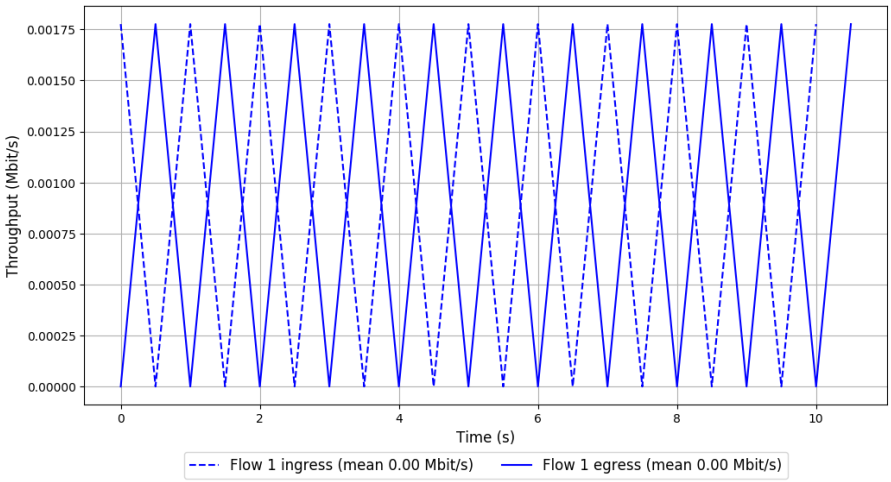


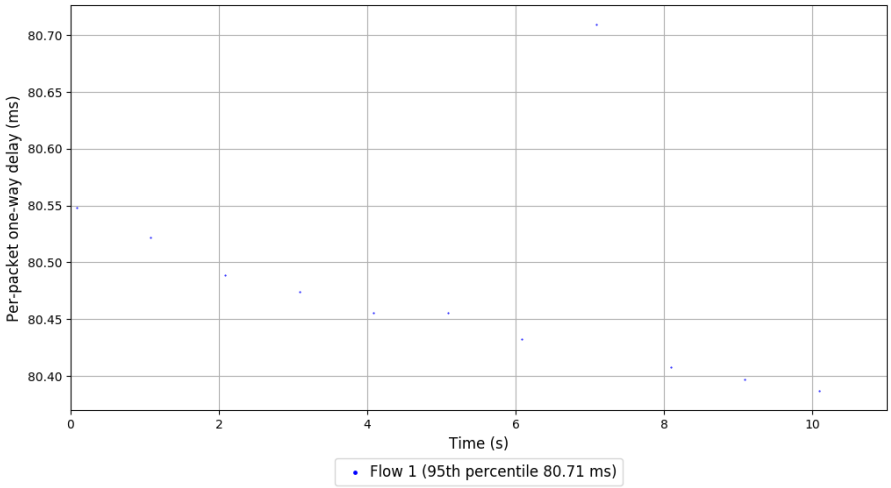


```
Run 2: Statistics of Muses-25

Start at: 2018-08-31 05:18:04
End at: 2018-08-31 05:18:34
Local clock offset: -10.143 ms
Remote clock offset: -0.964 ms
```

Run 2: Report of Muses-25 — Data Link





```
Run 3: Statistics of Muses-25

Start at: 2018-08-31 05:22:48
End at: 2018-08-31 05:23:18
Local clock offset: -7.257 ms
Remote clock offset: 1.603 ms
```

Run 3: Report of Muses-25 — Data Link