

Pantheon Report

Generated at 2018-08-28 05:55:07 (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.

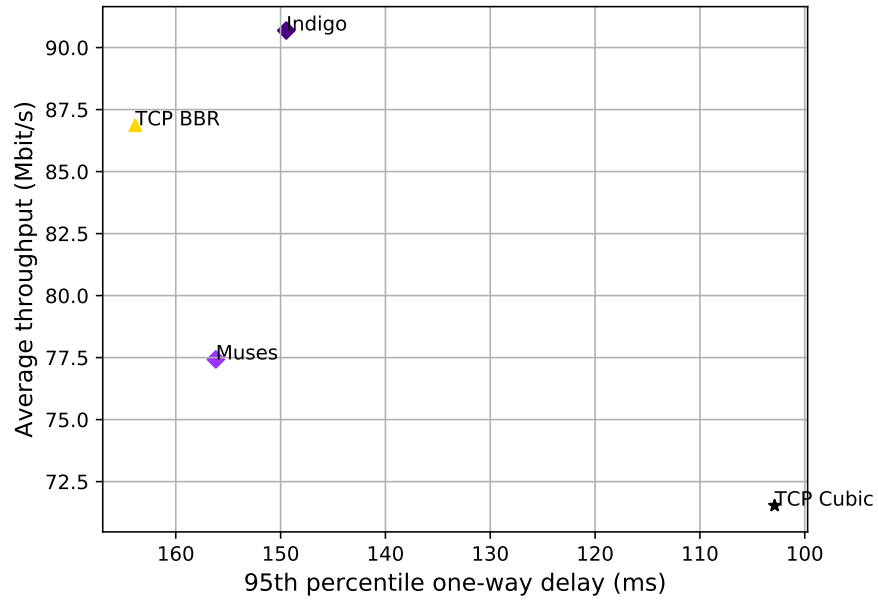
System info:

```
Linux 4.15.0-1019-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
```

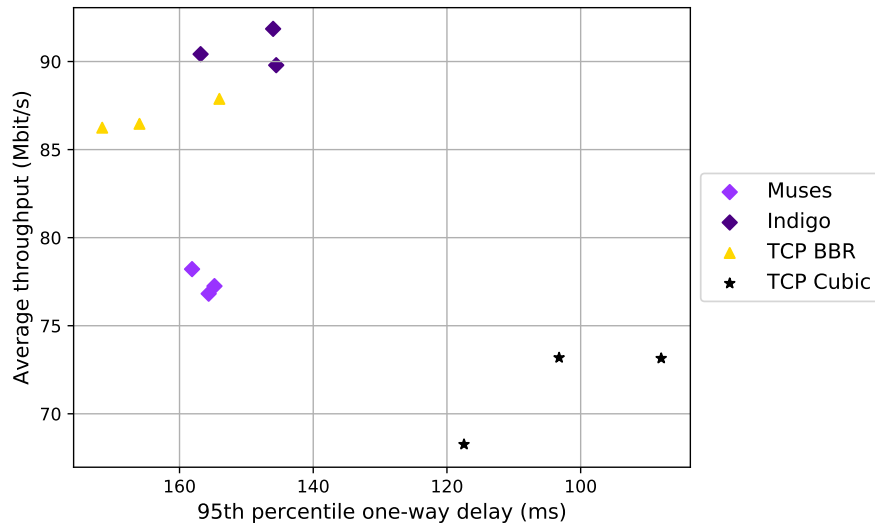
Git summary:

```
branch: muses @ 86ef433b09b2f4ecae1186d6940af93bcf0969cd
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ b261c9e99c63be452bc16f94ce0caa99a4c9d39a
third_party/pantheon-tunnel @ cbf6e6db5ff5740dfe1771f813cd646339e1952
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)



test from Colombia to AWS Brazil 2, 3 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	3	86.86	163.86	2.02
TCP Cubic	3	71.53	102.87	0.56
Indigo	3	90.69	149.46	1.92
Muses	3	77.43	156.18	1.12

Run 1: Statistics of TCP BBR

Start at: 2018-08-28 05:39:39

End at: 2018-08-28 05:40:09

Local clock offset: 3.256 ms

Remote clock offset: 5.311 ms

Below is generated by plot.py at 2018-08-28 05:54:32

Datalink statistics

-- Total of 1 flow:

Average throughput: 86.25 Mbit/s

95th percentile per-packet one-way delay: 171.564 ms

Loss rate: 2.11%

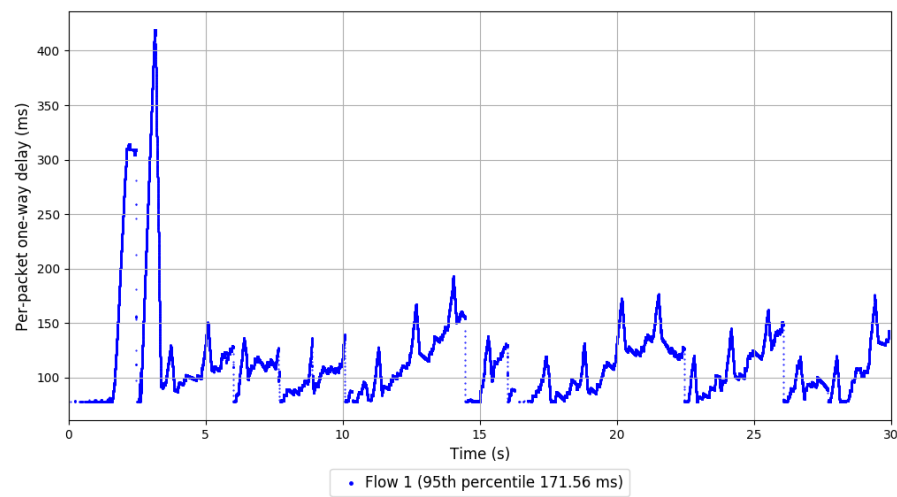
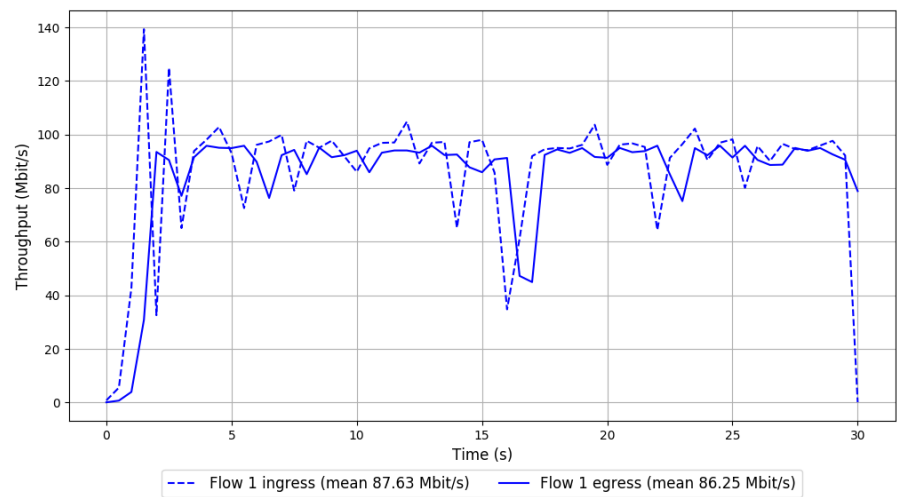
-- Flow 1:

Average throughput: 86.25 Mbit/s

95th percentile per-packet one-way delay: 171.564 ms

Loss rate: 2.11%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-08-28 05:44:23

End at: 2018-08-28 05:44:53

Local clock offset: 2.887 ms

Remote clock offset: 1.266 ms

Below is generated by plot.py at 2018-08-28 05:54:33

Datalink statistics

-- Total of 1 flow:

Average throughput: 86.46 Mbit/s

95th percentile per-packet one-way delay: 165.988 ms

Loss rate: 2.24%

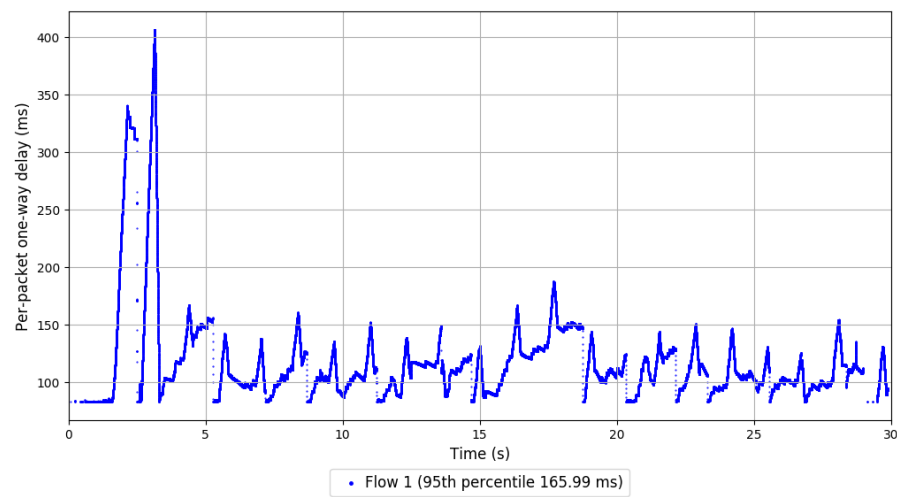
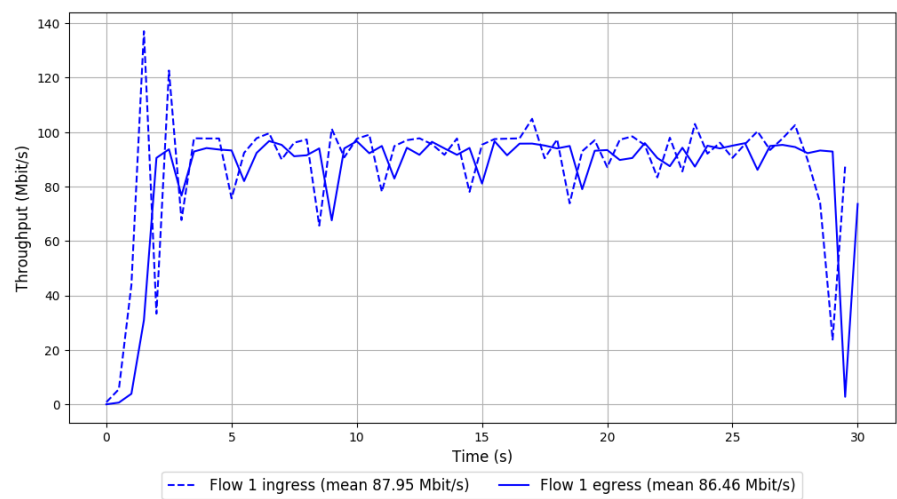
-- Flow 1:

Average throughput: 86.46 Mbit/s

95th percentile per-packet one-way delay: 165.988 ms

Loss rate: 2.24%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-08-28 05:49:07

End at: 2018-08-28 05:49:37

Local clock offset: 2.617 ms

Remote clock offset: 2.364 ms

Below is generated by plot.py at 2018-08-28 05:54:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 87.88 Mbit/s

95th percentile per-packet one-way delay: 154.039 ms

Loss rate: 1.72%

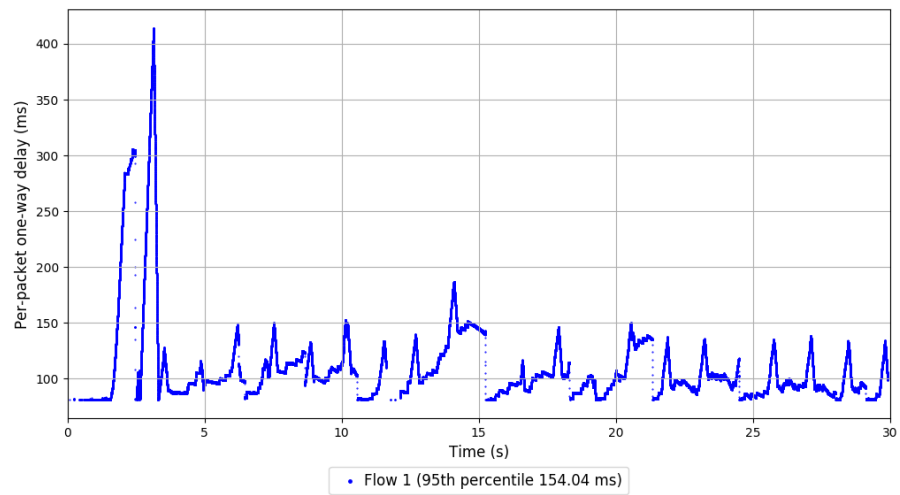
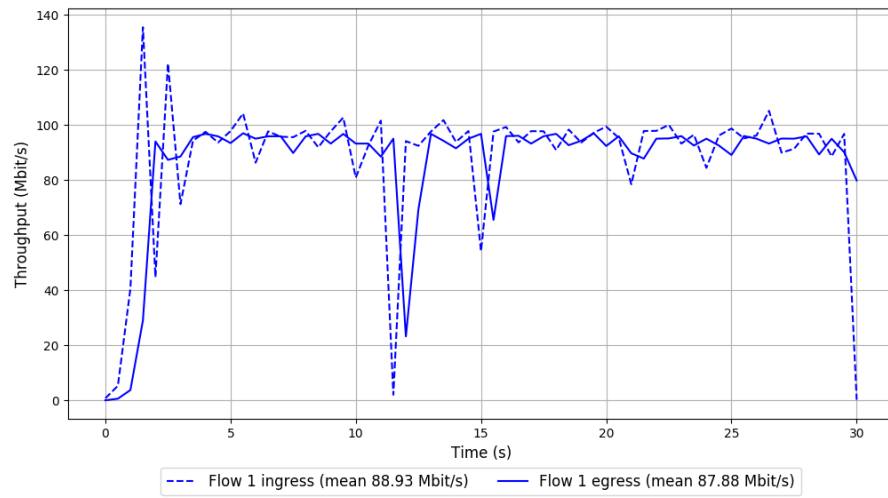
-- Flow 1:

Average throughput: 87.88 Mbit/s

95th percentile per-packet one-way delay: 154.039 ms

Loss rate: 1.72%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-08-28 05:42:02

End at: 2018-08-28 05:42:32

Local clock offset: 4.61 ms

Remote clock offset: 6.493 ms

Below is generated by plot.py at 2018-08-28 05:54:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 73.15 Mbit/s

95th percentile per-packet one-way delay: 87.951 ms

Loss rate: 0.58%

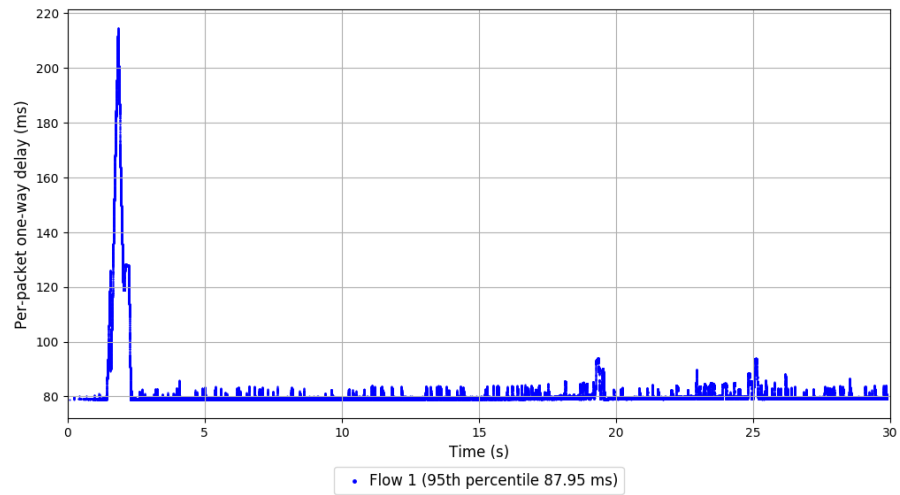
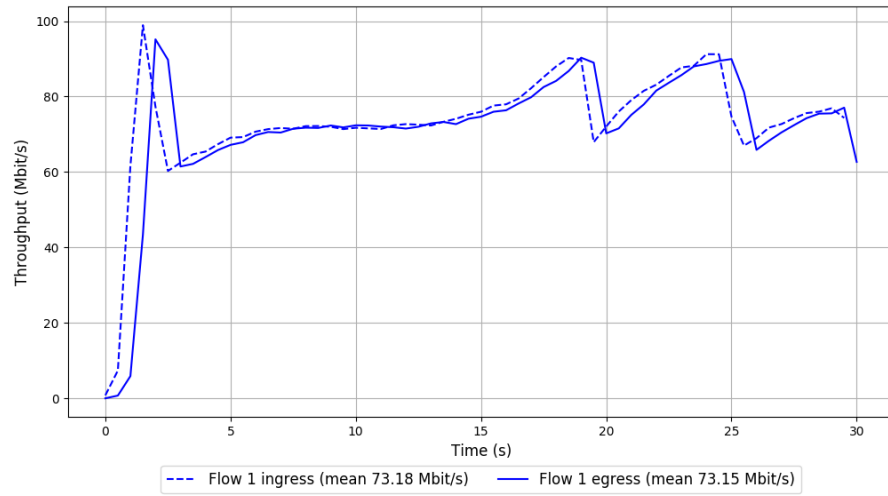
-- Flow 1:

Average throughput: 73.15 Mbit/s

95th percentile per-packet one-way delay: 87.951 ms

Loss rate: 0.58%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-08-28 05:46:46

End at: 2018-08-28 05:47:16

Local clock offset: 2.775 ms

Remote clock offset: 5.162 ms

Below is generated by plot.py at 2018-08-28 05:54:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 73.18 Mbit/s

95th percentile per-packet one-way delay: 103.220 ms

Loss rate: 0.64%

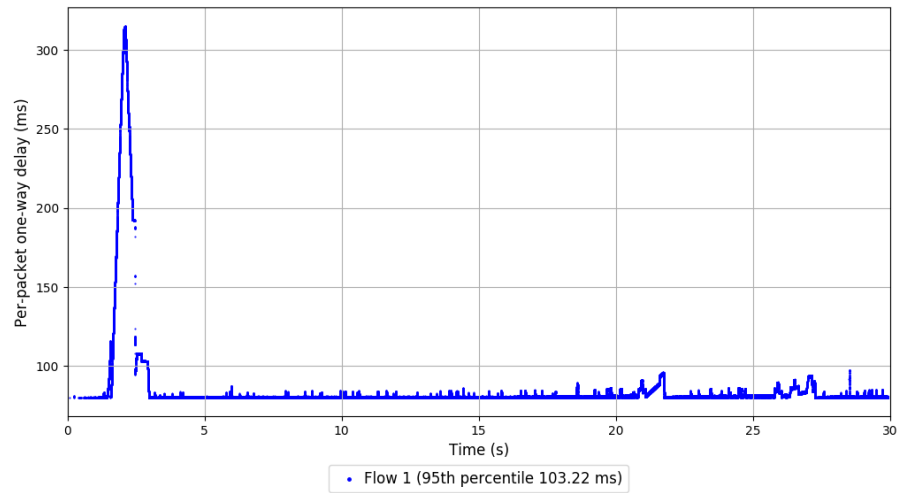
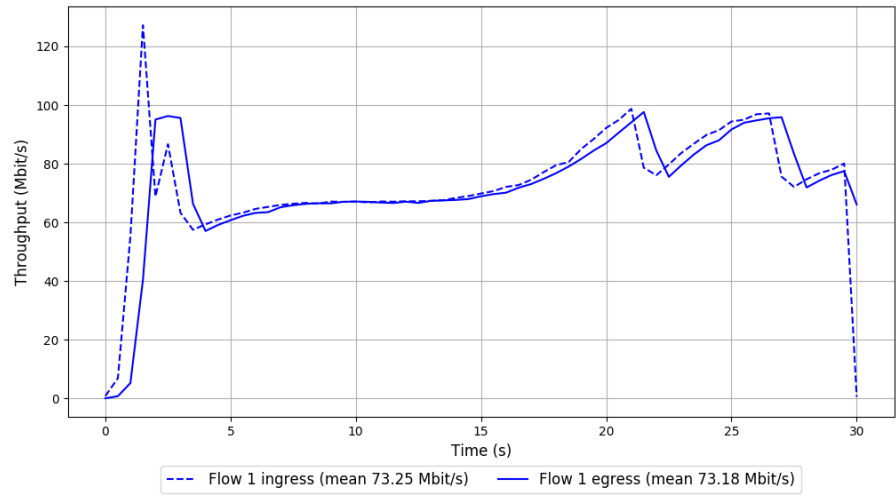
-- Flow 1:

Average throughput: 73.18 Mbit/s

95th percentile per-packet one-way delay: 103.220 ms

Loss rate: 0.64%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-08-28 05:51:31

End at: 2018-08-28 05:52:01

Local clock offset: 4.14 ms

Remote clock offset: 1.196 ms

Below is generated by plot.py at 2018-08-28 05:54:34

Datalink statistics

-- Total of 1 flow:

Average throughput: 68.26 Mbit/s

95th percentile per-packet one-way delay: 117.447 ms

Loss rate: 0.47%

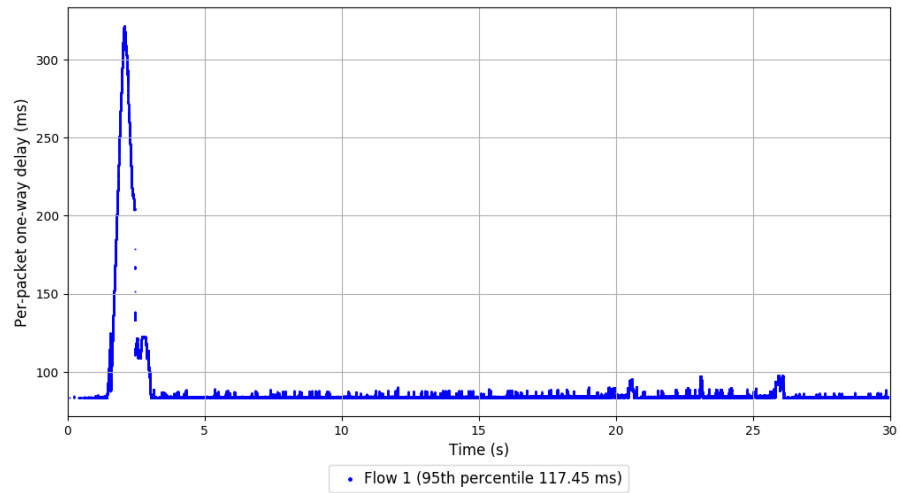
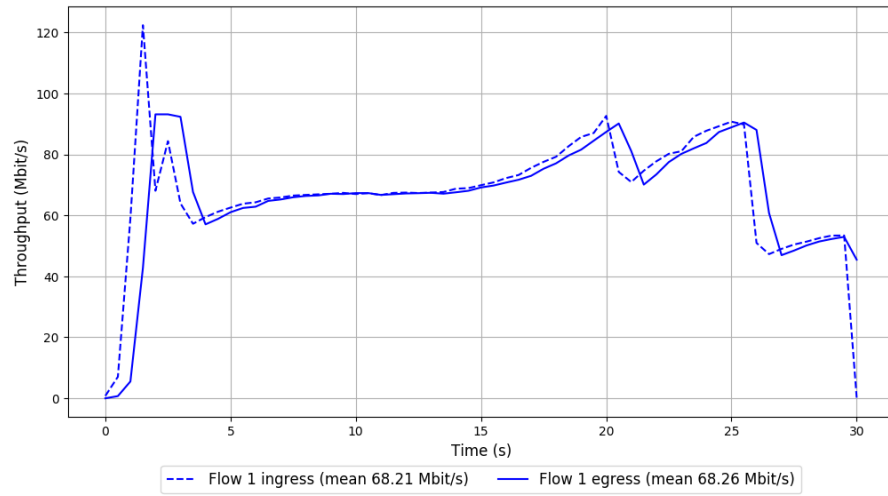
-- Flow 1:

Average throughput: 68.26 Mbit/s

95th percentile per-packet one-way delay: 117.447 ms

Loss rate: 0.47%

Run 3: Report of TCP Cubic — Data Link

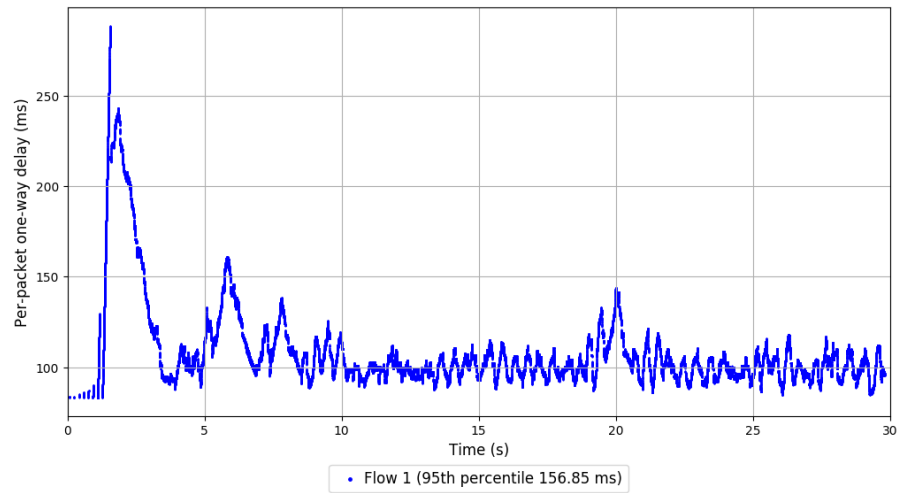
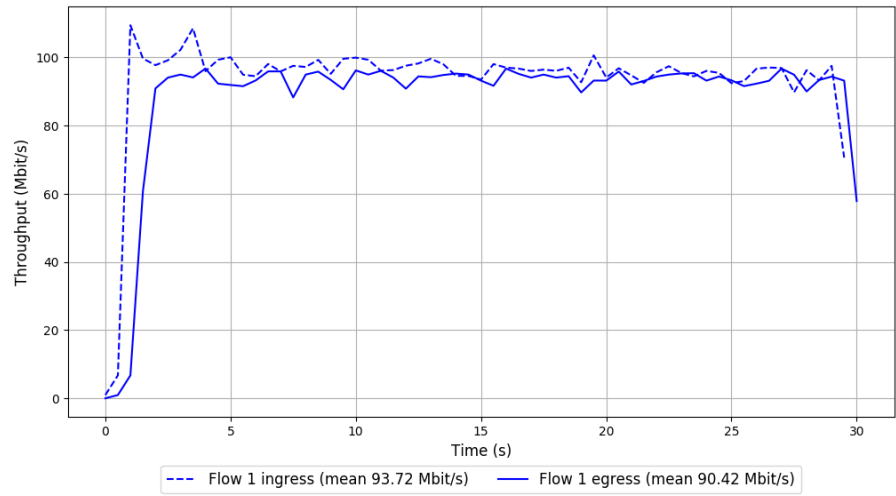


```
Run 1: Statistics of Indigo

Start at: 2018-08-28 05:40:50
End at: 2018-08-28 05:41:20
Local clock offset: 3.942 ms
Remote clock offset: 2.529 ms

# Below is generated by plot.py at 2018-08-28 05:54:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 90.42 Mbit/s
95th percentile per-packet one-way delay: 156.847 ms
Loss rate: 4.06%
-- Flow 1:
Average throughput: 90.42 Mbit/s
95th percentile per-packet one-way delay: 156.847 ms
Loss rate: 4.06%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-08-28 05:45:34

End at: 2018-08-28 05:46:05

Local clock offset: 4.379 ms

Remote clock offset: 2.322 ms

Below is generated by plot.py at 2018-08-28 05:54:36

Datalink statistics

-- Total of 1 flow:

Average throughput: 91.85 Mbit/s

95th percentile per-packet one-way delay: 146.000 ms

Loss rate: 0.77%

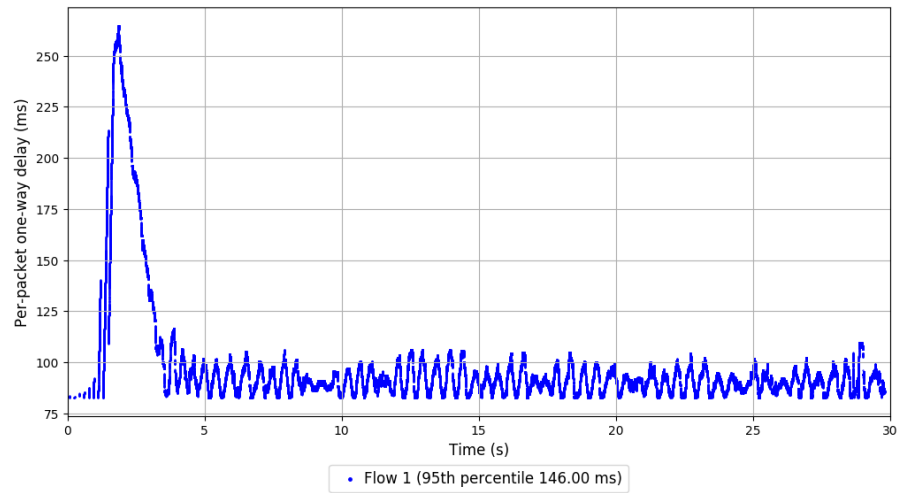
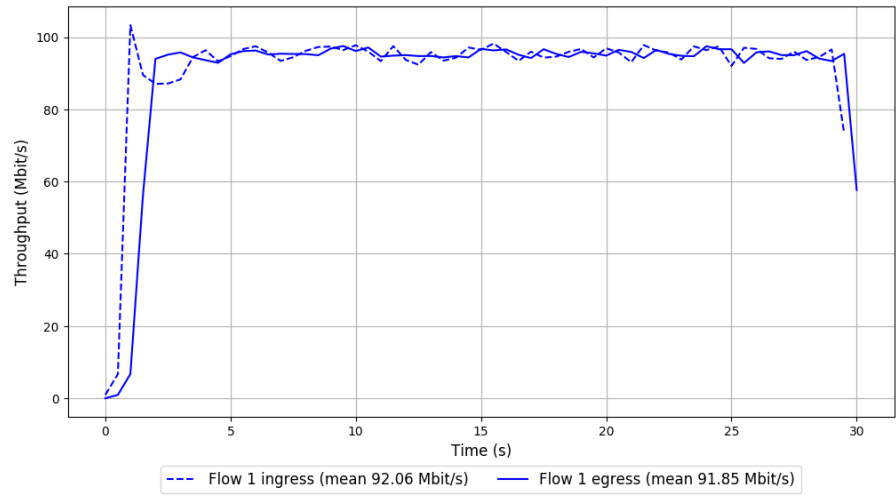
-- Flow 1:

Average throughput: 91.85 Mbit/s

95th percentile per-packet one-way delay: 146.000 ms

Loss rate: 0.77%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-08-28 05:50:19

End at: 2018-08-28 05:50:49

Local clock offset: 2.635 ms

Remote clock offset: 6.319 ms

Below is generated by plot.py at 2018-08-28 05:54:59

Datalink statistics

-- Total of 1 flow:

Average throughput: 89.79 Mbit/s

95th percentile per-packet one-way delay: 145.537 ms

Loss rate: 0.92%

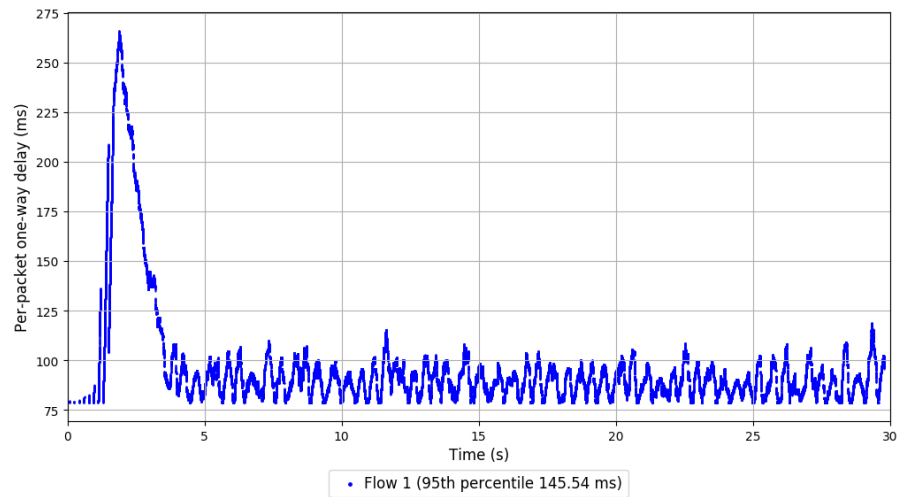
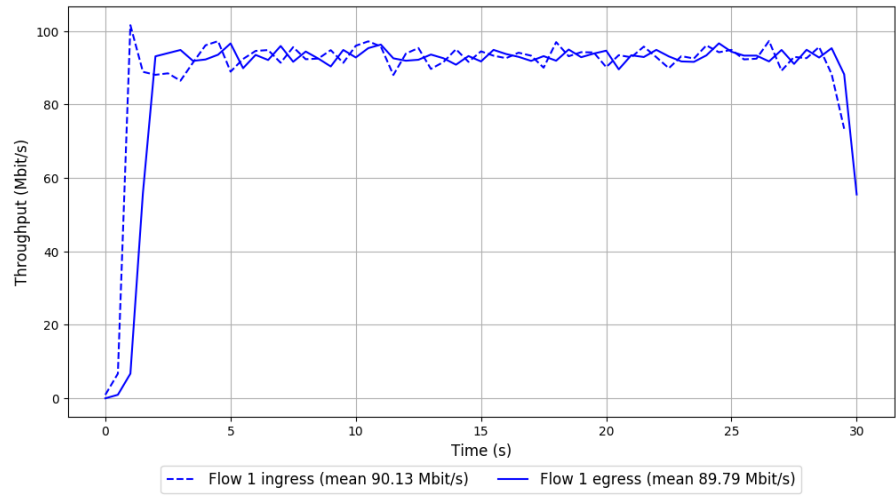
-- Flow 1:

Average throughput: 89.79 Mbit/s

95th percentile per-packet one-way delay: 145.537 ms

Loss rate: 0.92%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Muses

Start at: 2018-08-28 05:43:12

End at: 2018-08-28 05:43:42

Local clock offset: 3.683 ms

Remote clock offset: 6.497 ms

Below is generated by plot.py at 2018-08-28 05:55:06

Datalink statistics

-- Total of 1 flow:

Average throughput: 77.25 Mbit/s

95th percentile per-packet one-way delay: 154.772 ms

Loss rate: 1.22%

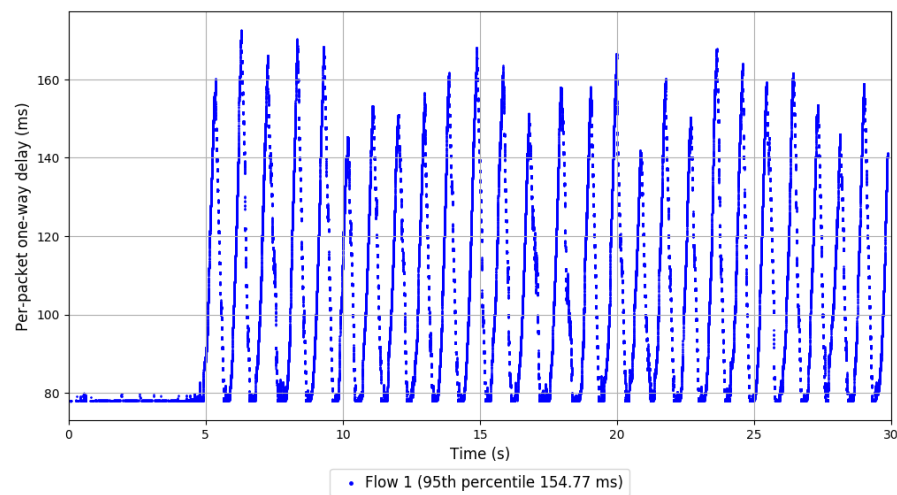
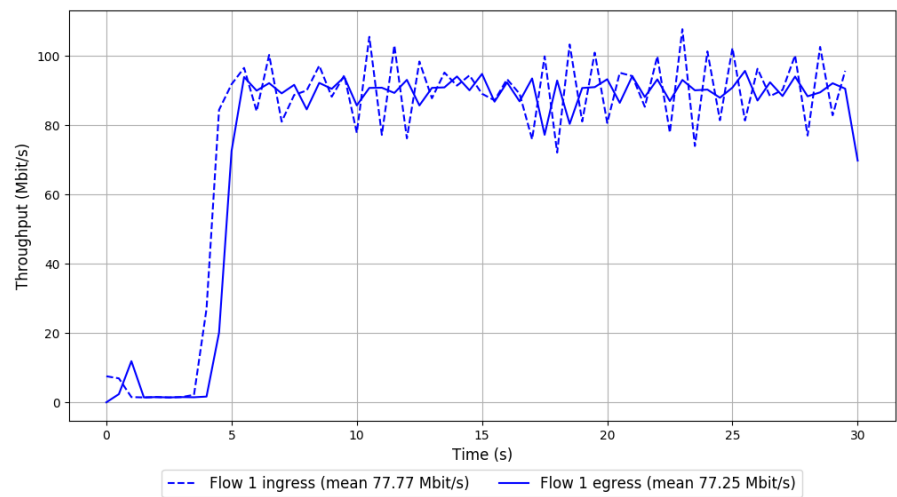
-- Flow 1:

Average throughput: 77.25 Mbit/s

95th percentile per-packet one-way delay: 154.772 ms

Loss rate: 1.22%

Run 1: Report of Muses — Data Link



Run 2: Statistics of Muses

Start at: 2018-08-28 05:47:57

End at: 2018-08-28 05:48:27

Local clock offset: 2.666 ms

Remote clock offset: 6.323 ms

Below is generated by plot.py at 2018-08-28 05:55:06

Datalink statistics

-- Total of 1 flow:

Average throughput: 76.82 Mbit/s

95th percentile per-packet one-way delay: 155.639 ms

Loss rate: 1.29%

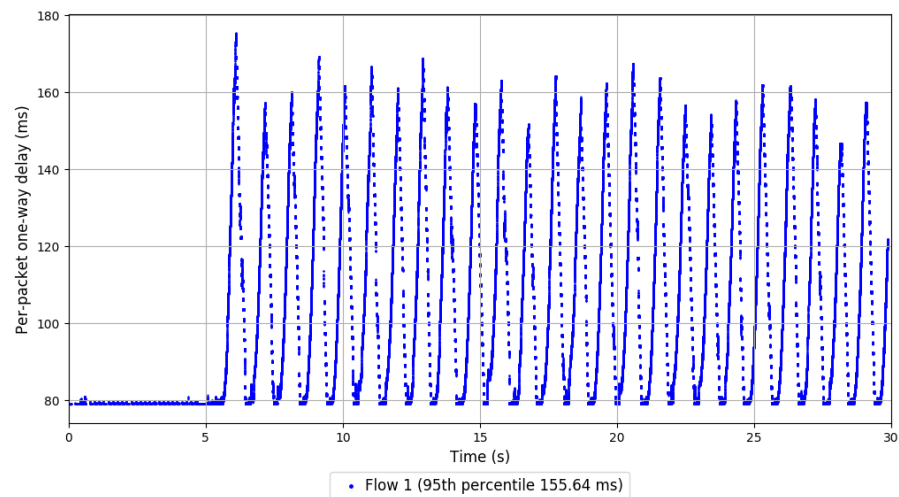
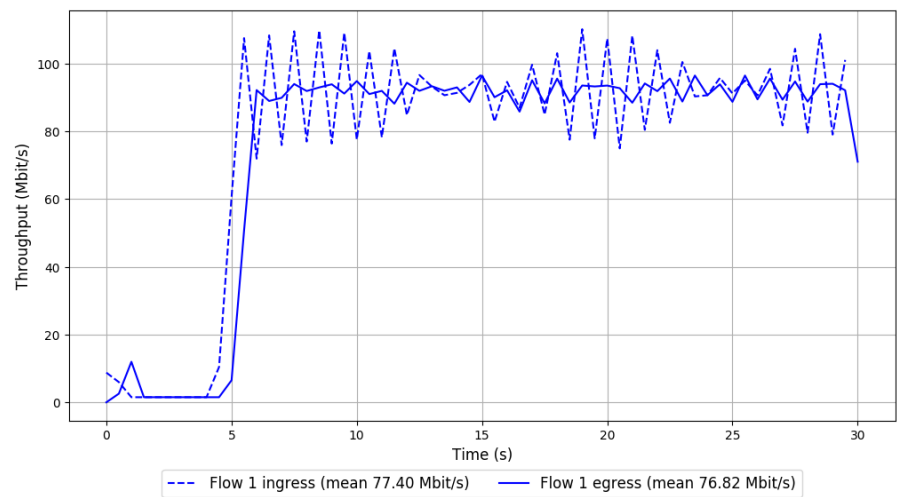
-- Flow 1:

Average throughput: 76.82 Mbit/s

95th percentile per-packet one-way delay: 155.639 ms

Loss rate: 1.29%

Run 2: Report of Muses — Data Link



Run 3: Statistics of Muses

Start at: 2018-08-28 05:52:41

End at: 2018-08-28 05:53:11

Local clock offset: 4.128 ms

Remote clock offset: 7.185 ms

Below is generated by plot.py at 2018-08-28 05:55:06

Datalink statistics

-- Total of 1 flow:

Average throughput: 78.21 Mbit/s

95th percentile per-packet one-way delay: 158.125 ms

Loss rate: 0.85%

-- Flow 1:

Average throughput: 78.21 Mbit/s

95th percentile per-packet one-way delay: 158.125 ms

Loss rate: 0.85%

Run 3: Report of Muses — Data Link

