

Pantheon Report

Generated at 2018-08-28 05:54:19 (UTC).

Data path: Brazil on **p4p1** (*remote*) → AWS Brazil 1 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.

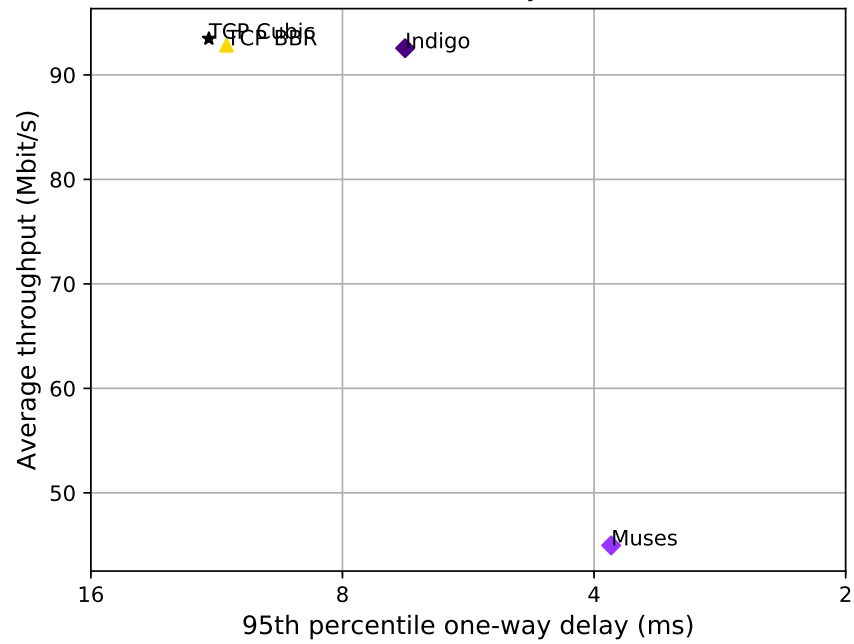
System info:

```
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
```

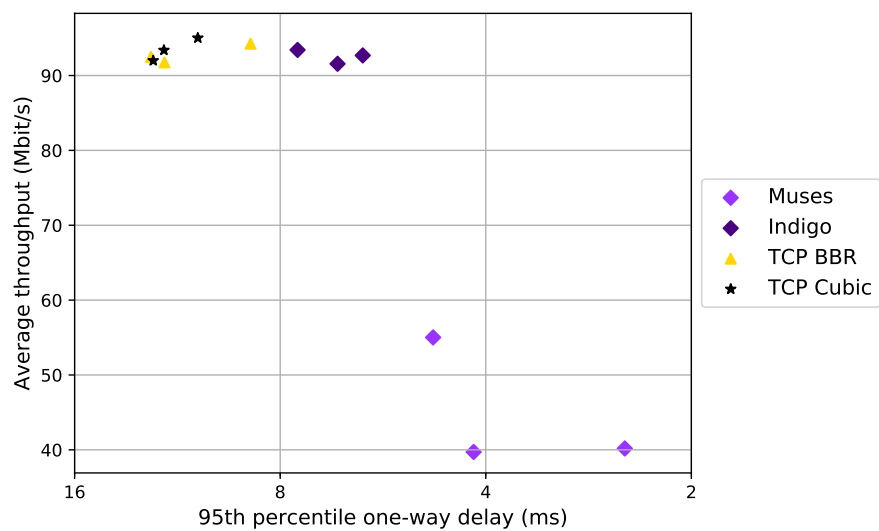
Git summary:

```
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 Brazil to AWS Brazil 1, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from Brazil to AWS Brazil 1, 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	92.84	11.01	0.07
TCP Cubic	3	93.47	11.56	0.06
Indigo	3	92.56	6.73	0.02
Muses	3	44.97	3.82	0.02

Run 1: Statistics of TCP BBR

Start at: 2018-08-28 05:41:51

End at: 2018-08-28 05:42:21

Local clock offset: 4.395 ms

Remote clock offset: 0.265 ms

Below is generated by plot.py at 2018-08-28 05:53:52

Datalink statistics

-- Total of 1 flow:

Average throughput: 92.50 Mbit/s

95th percentile per-packet one-way delay: 12.367 ms

Loss rate: 0.14%

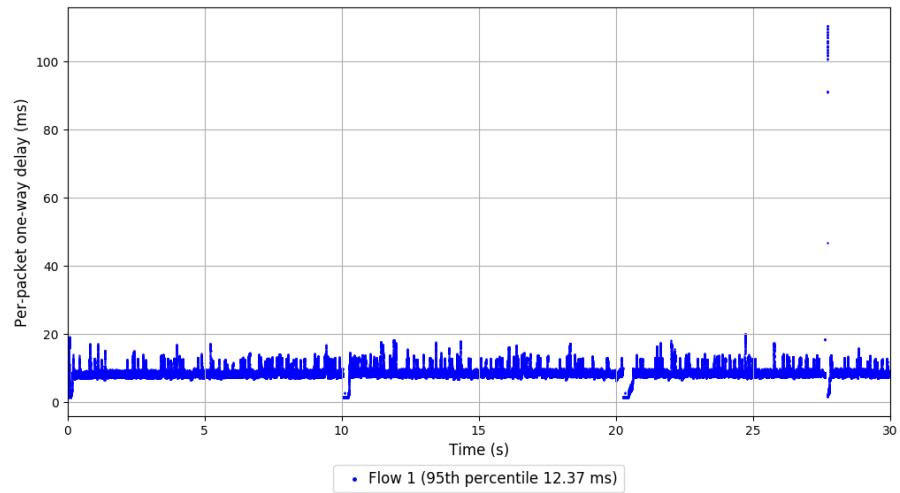
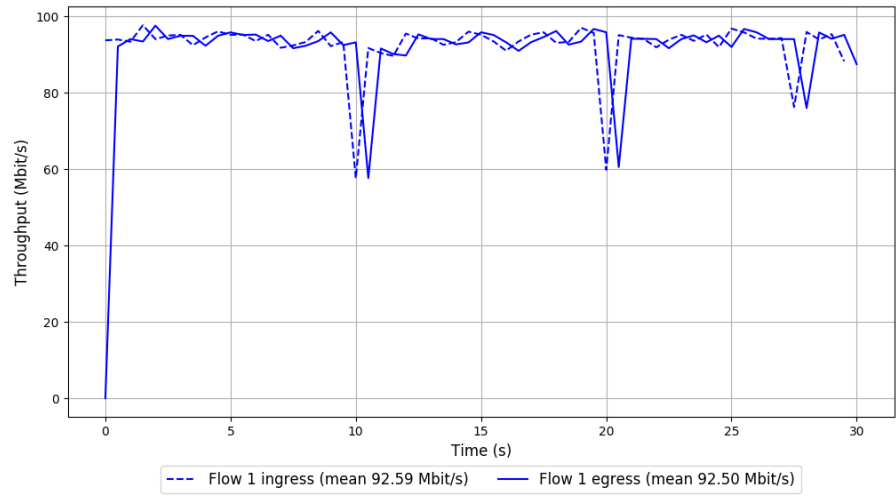
-- Flow 1:

Average throughput: 92.50 Mbit/s

95th percentile per-packet one-way delay: 12.367 ms

Loss rate: 0.14%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-08-28 05:46:24

End at: 2018-08-28 05:46:54

Local clock offset: 4.459 ms

Remote clock offset: 0.267 ms

Below is generated by plot.py at 2018-08-28 05:53:54

Datalink statistics

-- Total of 1 flow:

Average throughput: 94.25 Mbit/s

95th percentile per-packet one-way delay: 8.840 ms

Loss rate: 0.03%

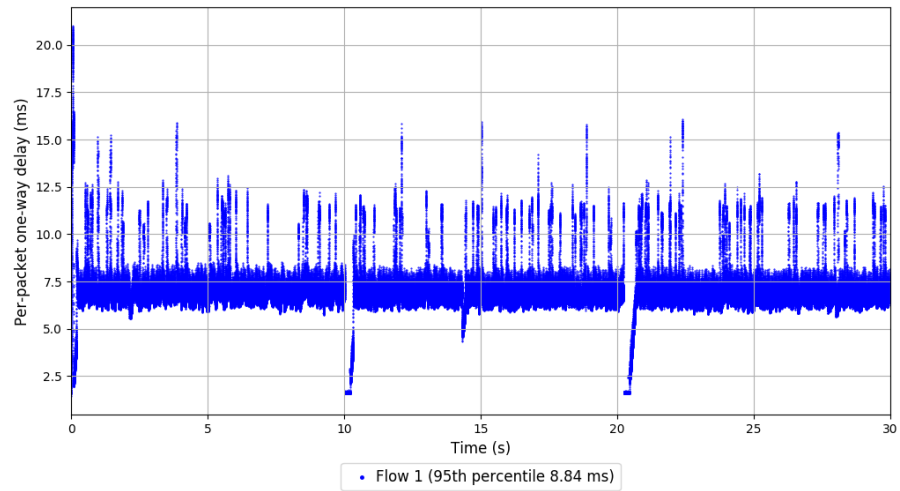
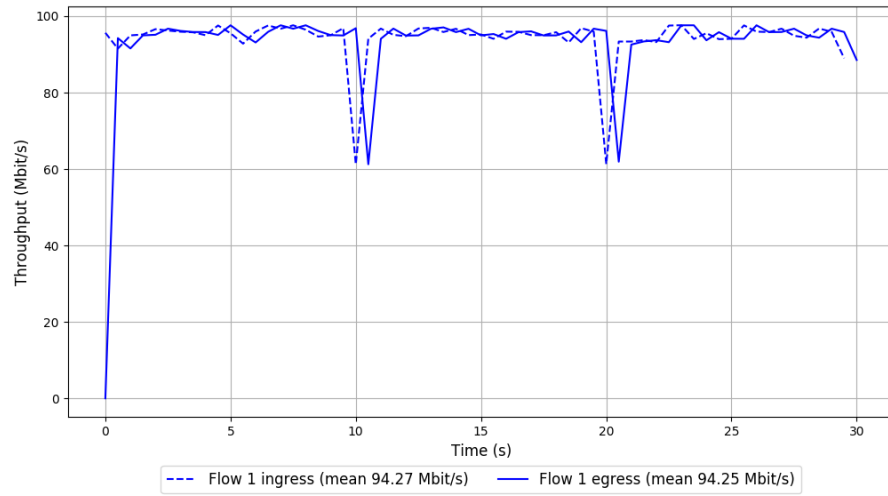
-- Flow 1:

Average throughput: 94.25 Mbit/s

95th percentile per-packet one-way delay: 8.840 ms

Loss rate: 0.03%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-08-28 05:50:52

End at: 2018-08-28 05:51:22

Local clock offset: 5.274 ms

Remote clock offset: 0.197 ms

Below is generated by plot.py at 2018-08-28 05:53:54

Datalink statistics

-- Total of 1 flow:

Average throughput: 91.76 Mbit/s

95th percentile per-packet one-way delay: 11.817 ms

Loss rate: 0.03%

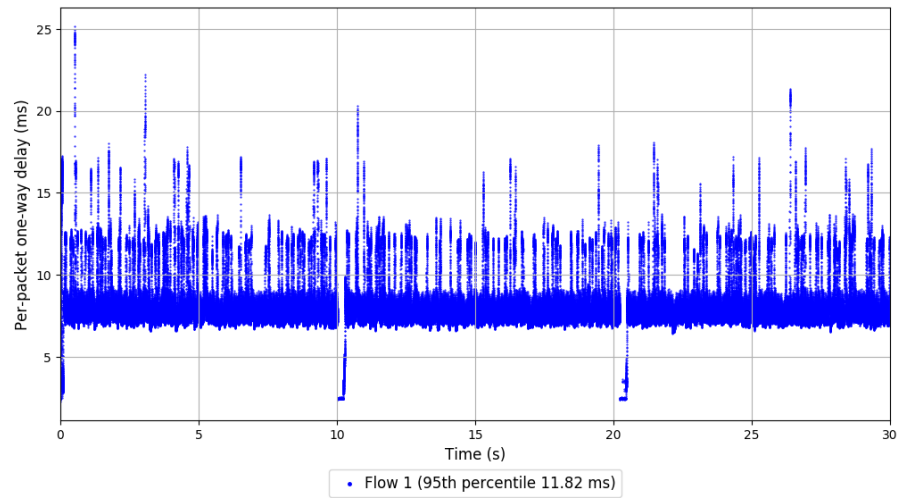
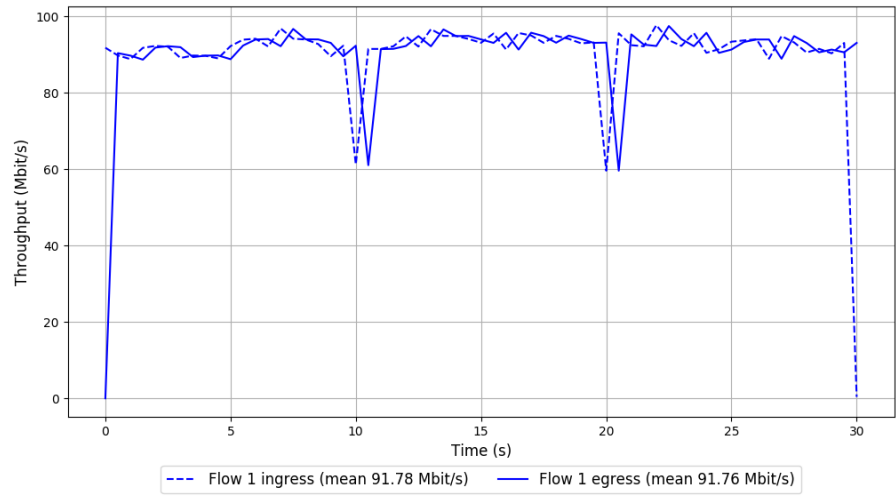
-- Flow 1:

Average throughput: 91.76 Mbit/s

95th percentile per-packet one-way delay: 11.817 ms

Loss rate: 0.03%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-08-28 05:42:58

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

Local clock offset: 5.157 ms

Remote clock offset: 0.259 ms

Below is generated by plot.py at 2018-08-28 05:53:54

Datalink statistics

-- Total of 1 flow:

Average throughput: 91.99 Mbit/s

95th percentile per-packet one-way delay: 12.274 ms

Loss rate: 0.06%

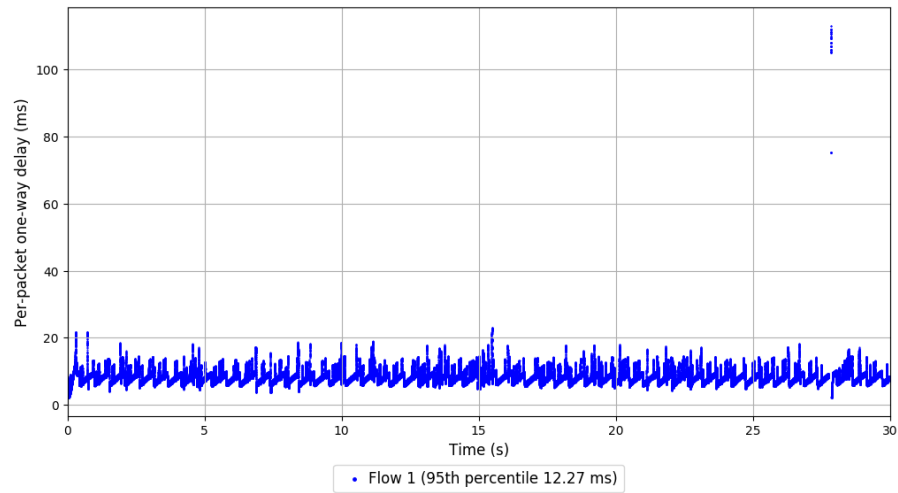
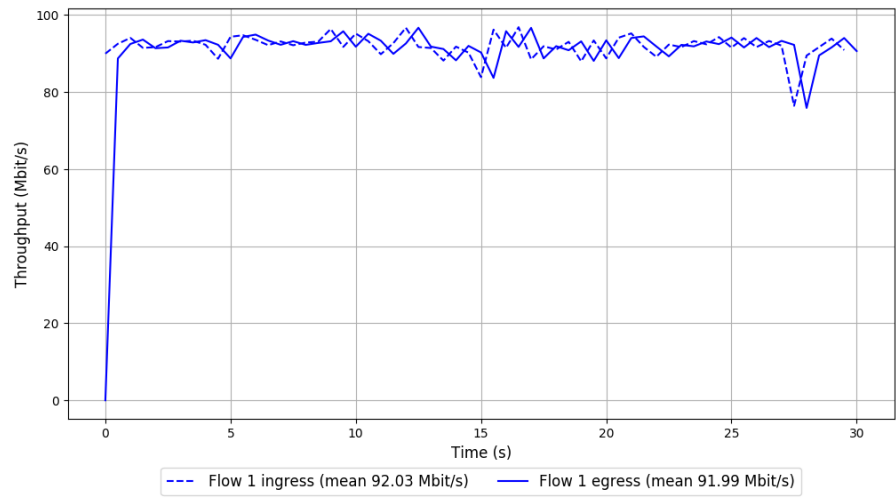
-- Flow 1:

Average throughput: 91.99 Mbit/s

95th percentile per-packet one-way delay: 12.274 ms

Loss rate: 0.06%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-08-28 05:47:31

End at: 2018-08-28 05:48:01

Local clock offset: 5.243 ms

Remote clock offset: 0.26 ms

Below is generated by plot.py at 2018-08-28 05:53:55

Datalink statistics

-- Total of 1 flow:

Average throughput: 95.02 Mbit/s

95th percentile per-packet one-way delay: 10.561 ms

Loss rate: 0.06%

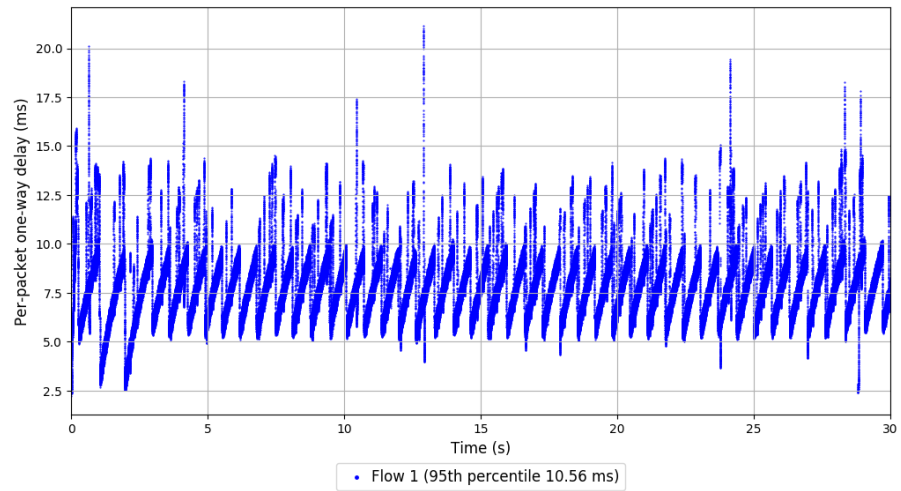
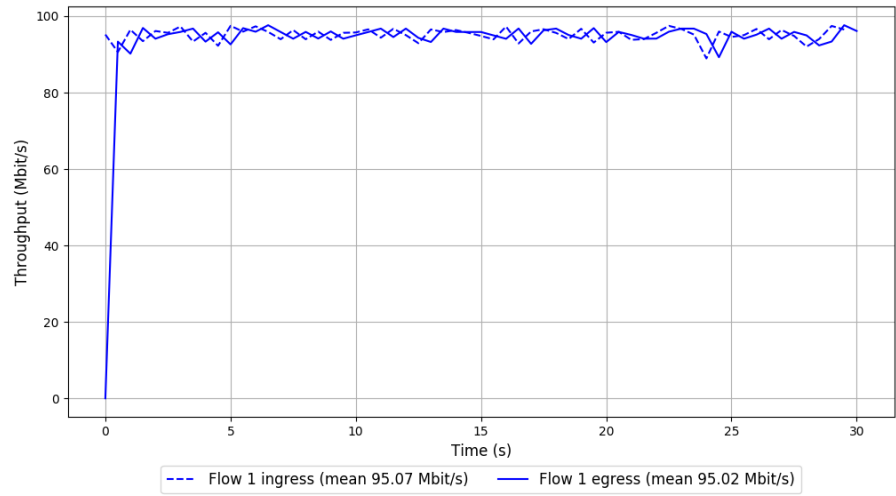
-- Flow 1:

Average throughput: 95.02 Mbit/s

95th percentile per-packet one-way delay: 10.561 ms

Loss rate: 0.06%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-08-28 05:51:59

End at: 2018-08-28 05:52:29

Local clock offset: 5.294 ms

Remote clock offset: 0.251 ms

Below is generated by plot.py at 2018-08-28 05:53:55

Datalink statistics

-- Total of 1 flow:

Average throughput: 93.39 Mbit/s

95th percentile per-packet one-way delay: 11.840 ms

Loss rate: 0.06%

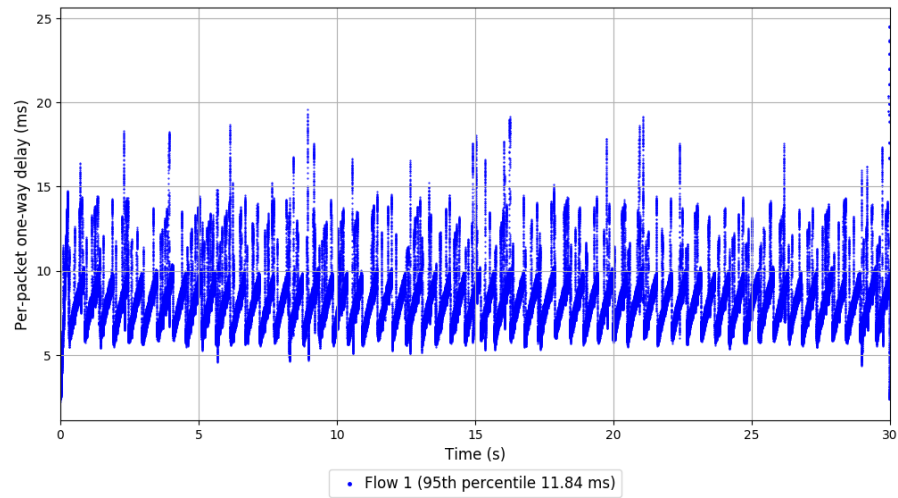
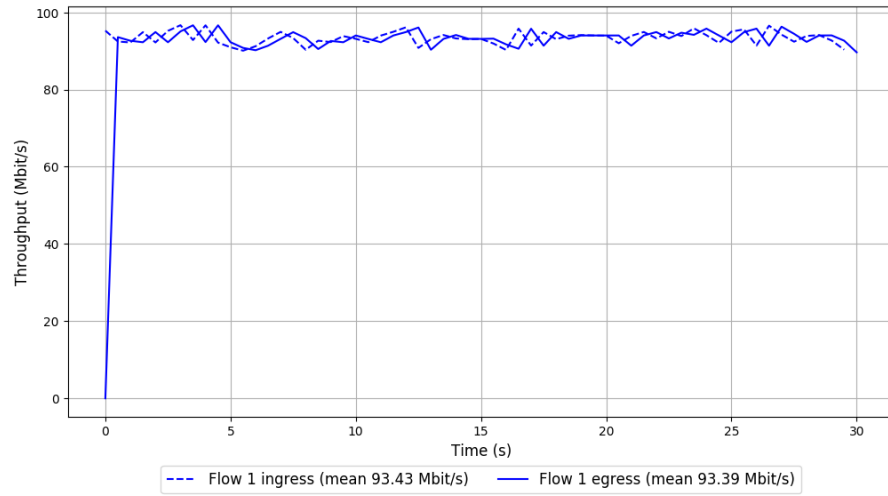
-- Flow 1:

Average throughput: 93.39 Mbit/s

95th percentile per-packet one-way delay: 11.840 ms

Loss rate: 0.06%

Run 3: Report of TCP Cubic — Data Link

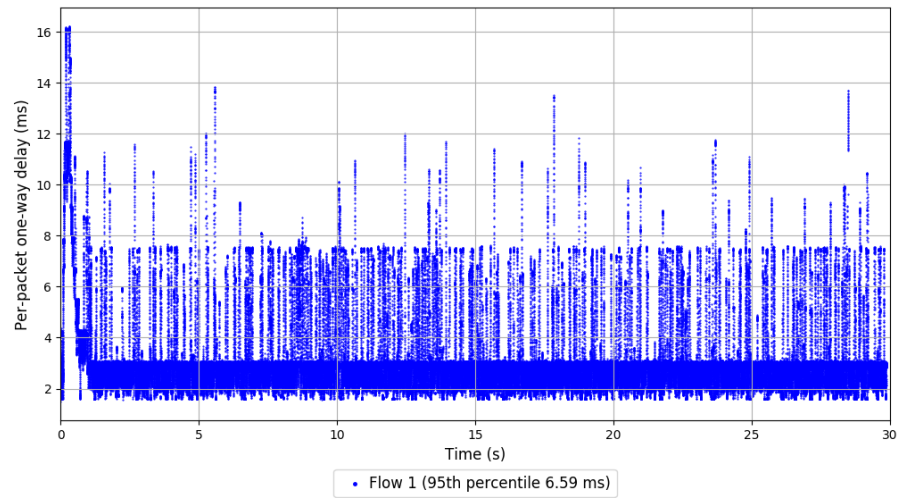
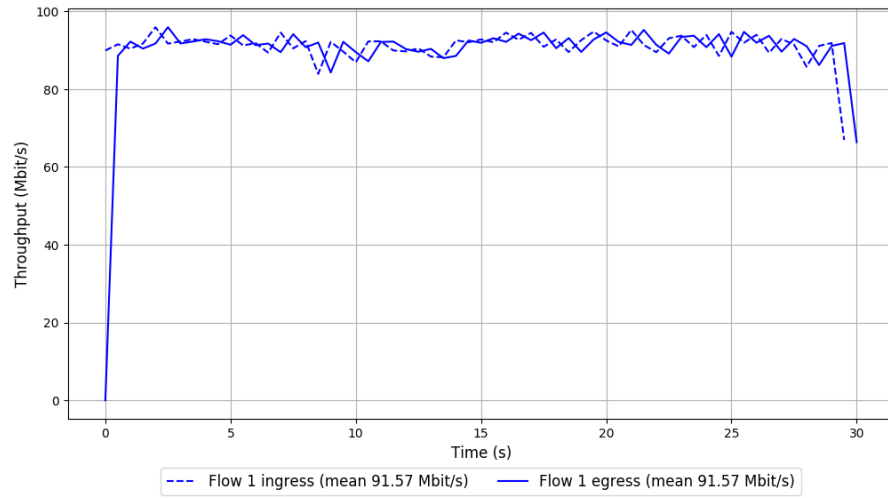


```
Run 1: Statistics of Indigo

Start at: 2018-08-28 05:40:42
End at: 2018-08-28 05:41:12
Local clock offset: 4.404 ms
Remote clock offset: 0.185 ms

# Below is generated by plot.py at 2018-08-28 05:53:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.57 Mbit/s
95th percentile per-packet one-way delay: 6.593 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 91.57 Mbit/s
95th percentile per-packet one-way delay: 6.593 ms
Loss rate: 0.02%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-08-28 05:45:16

End at: 2018-08-28 05:45:46

Local clock offset: 5.23 ms

Remote clock offset: 0.266 ms

Below is generated by plot.py at 2018-08-28 05:53:55

Datalink statistics

-- Total of 1 flow:

Average throughput: 93.42 Mbit/s

95th percentile per-packet one-way delay: 7.545 ms

Loss rate: 0.02%

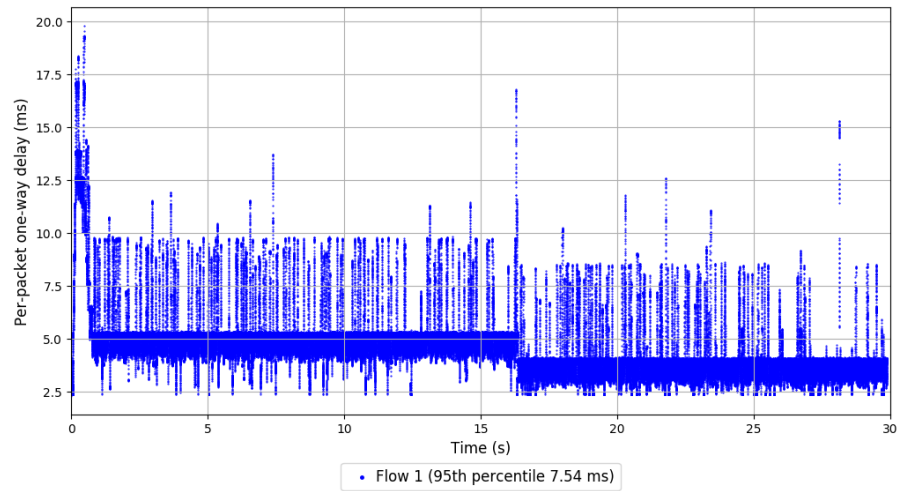
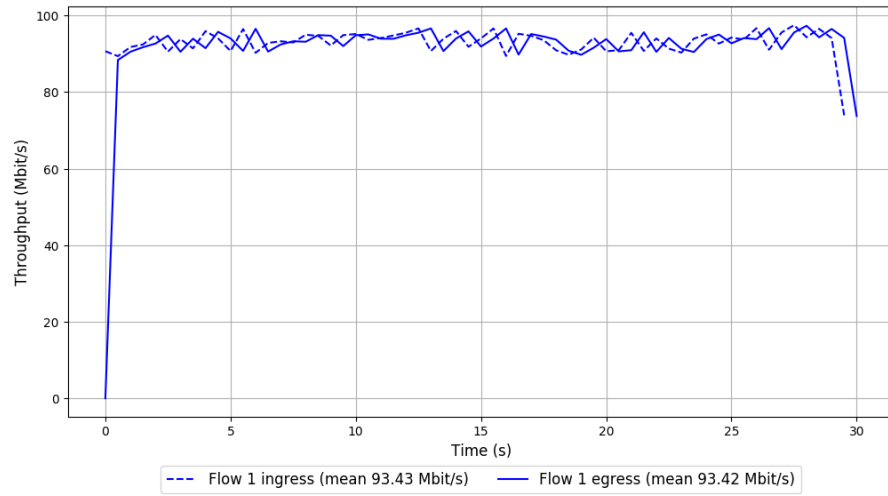
-- Flow 1:

Average throughput: 93.42 Mbit/s

95th percentile per-packet one-way delay: 7.545 ms

Loss rate: 0.02%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-08-28 05:49:44

End at: 2018-08-28 05:50:14

Local clock offset: 4.42 ms

Remote clock offset: 0.256 ms

Below is generated by plot.py at 2018-08-28 05:54:18

Datalink statistics

-- Total of 1 flow:

Average throughput: 92.69 Mbit/s

95th percentile per-packet one-way delay: 6.056 ms

Loss rate: 0.02%

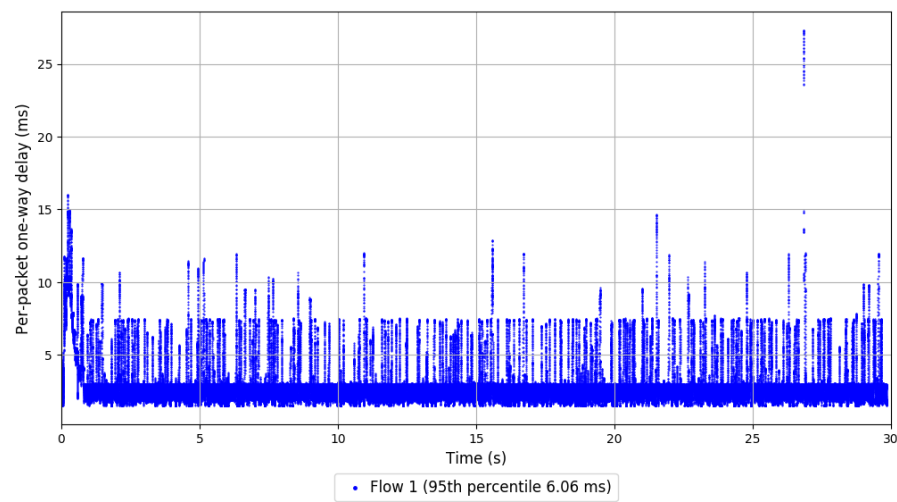
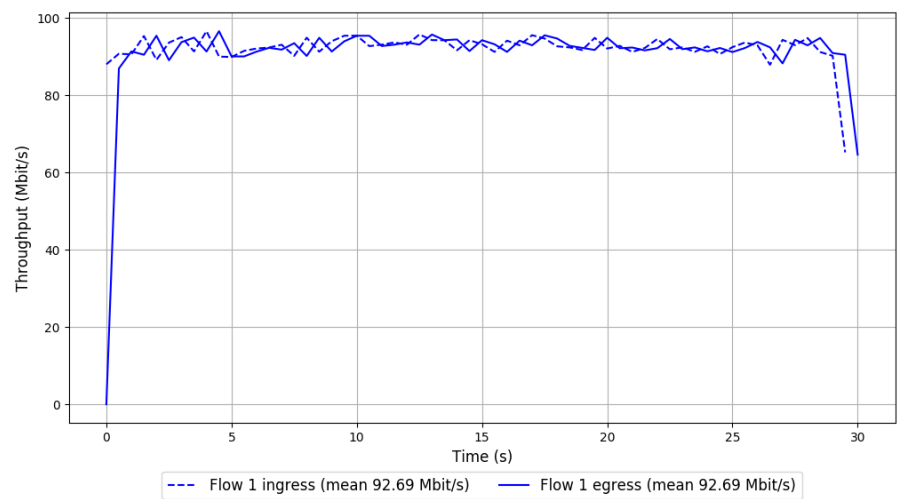
-- Flow 1:

Average throughput: 92.69 Mbit/s

95th percentile per-packet one-way delay: 6.056 ms

Loss rate: 0.02%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Muses

Start at: 2018-08-28 05:39:37

End at: 2018-08-28 05:40:07

Local clock offset: 5.266 ms

Remote clock offset: 0.263 ms

Below is generated by plot.py at 2018-08-28 05:54:18

Datalink statistics

-- Total of 1 flow:

Average throughput: 39.72 Mbit/s

95th percentile per-packet one-way delay: 4.167 ms

Loss rate: 0.02%

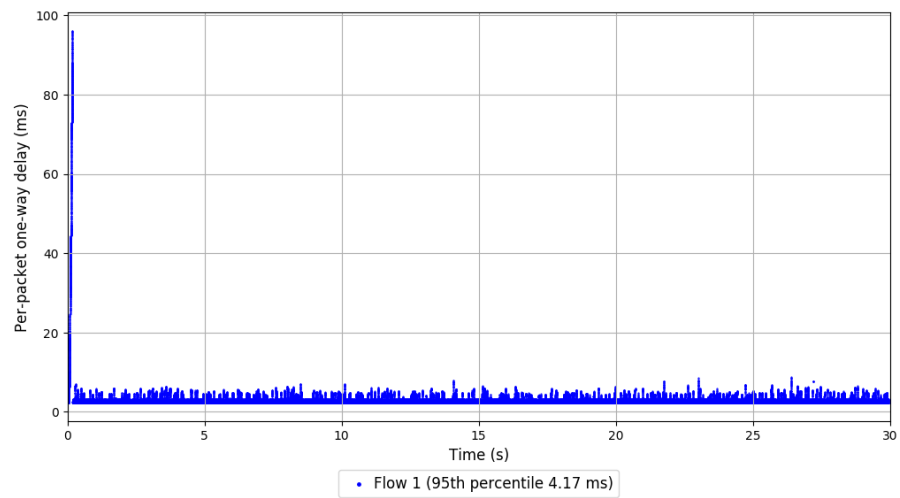
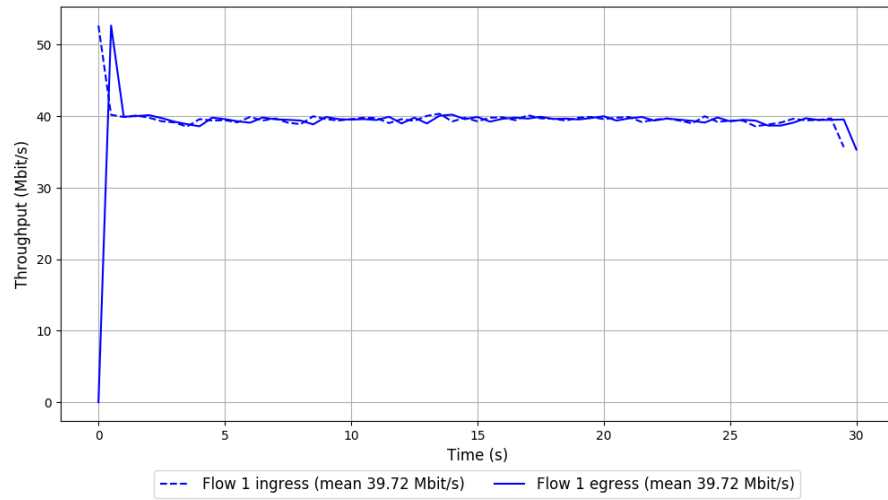
-- Flow 1:

Average throughput: 39.72 Mbit/s

95th percentile per-packet one-way delay: 4.167 ms

Loss rate: 0.02%

Run 1: Report of Muses — Data Link



Run 2: Statistics of Muses

Start at: 2018-08-28 05:44:10

End at: 2018-08-28 05:44:40

Local clock offset: 5.993 ms

Remote clock offset: 0.26 ms

Below is generated by plot.py at 2018-08-28 05:54:18

Datalink statistics

-- Total of 1 flow:

Average throughput: 55.02 Mbit/s

95th percentile per-packet one-way delay: 4.777 ms

Loss rate: 0.01%

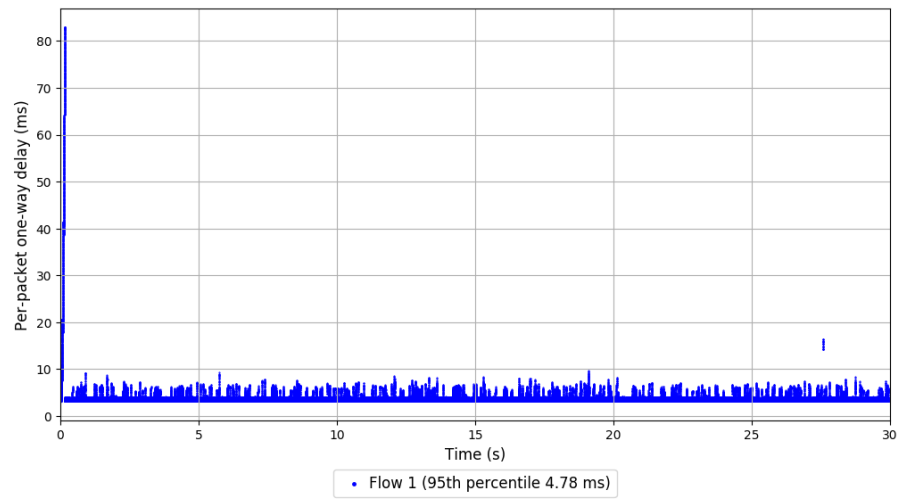
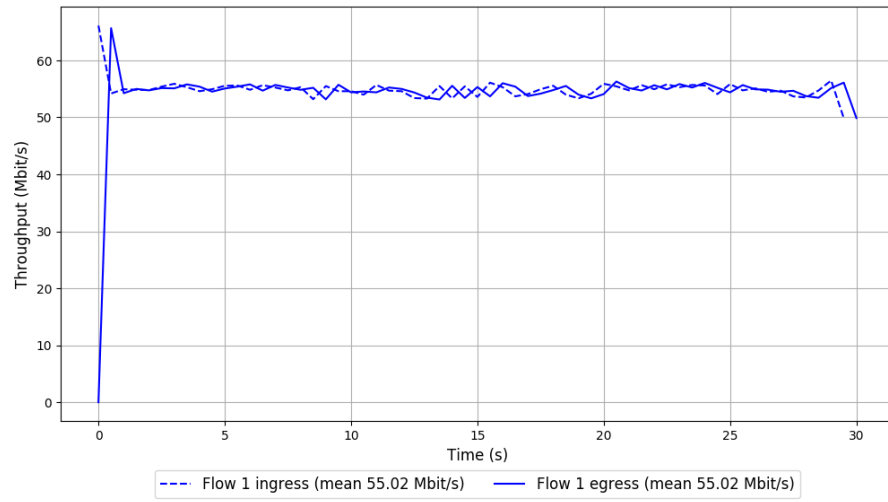
-- Flow 1:

Average throughput: 55.02 Mbit/s

95th percentile per-packet one-way delay: 4.777 ms

Loss rate: 0.01%

Run 2: Report of Muses — Data Link



Run 3: Statistics of Muses

Start at: 2018-08-28 05:48:38

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

Local clock offset: 4.412 ms

Remote clock offset: 0.275 ms

Below is generated by plot.py at 2018-08-28 05:54:18

Datalink statistics

-- Total of 1 flow:

Average throughput: 40.18 Mbit/s

95th percentile per-packet one-way delay: 2.503 ms

Loss rate: 0.02%

-- Flow 1:

Average throughput: 40.18 Mbit/s

95th percentile per-packet one-way delay: 2.503 ms

Loss rate: 0.02%

Run 3: Report of Muses — Data Link

