

Pantheon Report

Generated at 2018-08-28 05:02:28 (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.

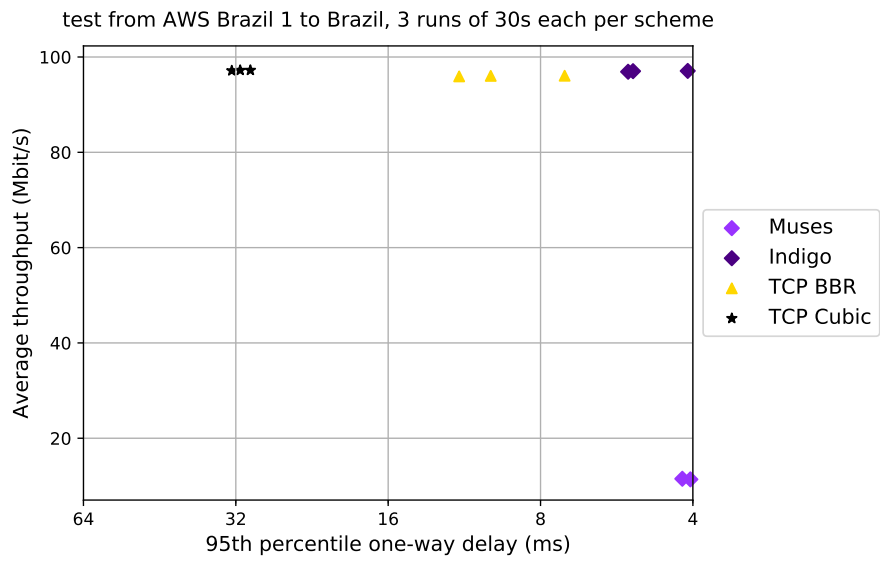
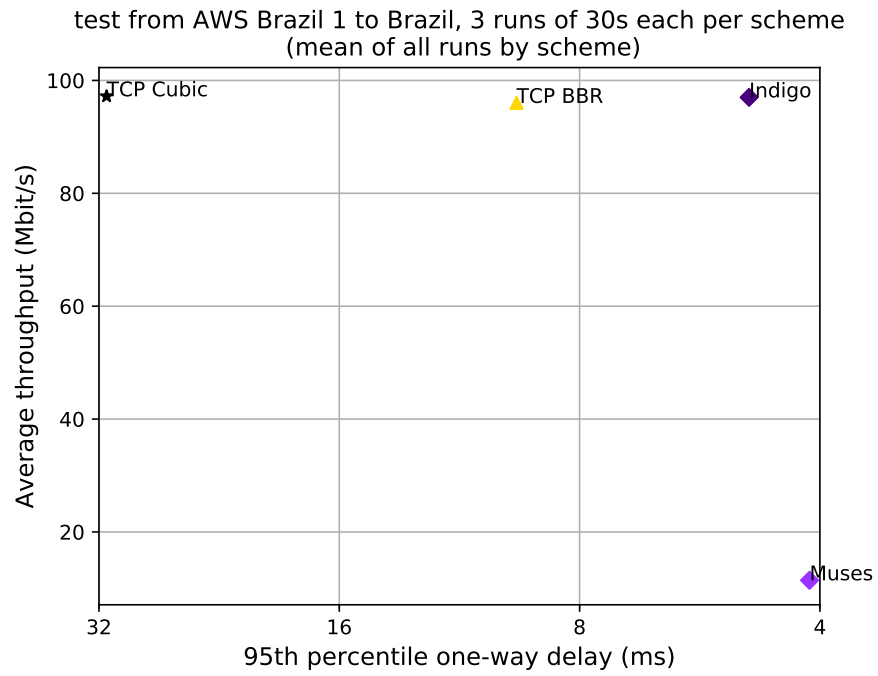
NTP offsets were measured against `gps.ntp.br` and have been applied to correct the timestamps in logs.

System info:

```
Linux 4.15.0-1019-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 @ cbfce6db5ff5740dfe1771f813cd646339e1952
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
```



scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	96.02	9.60	0.00
TCP Cubic	3	97.19	31.30	0.02
Indigo	3	97.00	4.91	0.00
Muses	2	11.43	4.12	49.49

Run 1: Statistics of TCP BBR

Start at: 2018-08-28 04:49:18

End at: 2018-08-28 04:49:48

Local clock offset: 11.15 ms

Remote clock offset: 0.392 ms

Below is generated by plot.py at 2018-08-28 05:02:17

Datalink statistics

-- Total of 1 flow:

Average throughput: 96.05 Mbit/s

95th percentile per-packet one-way delay: 10.034 ms

Loss rate: 0.00%

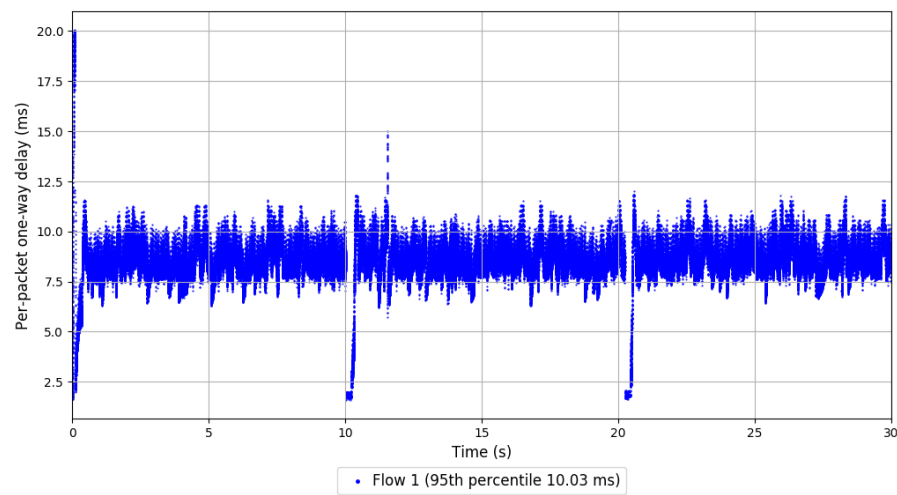
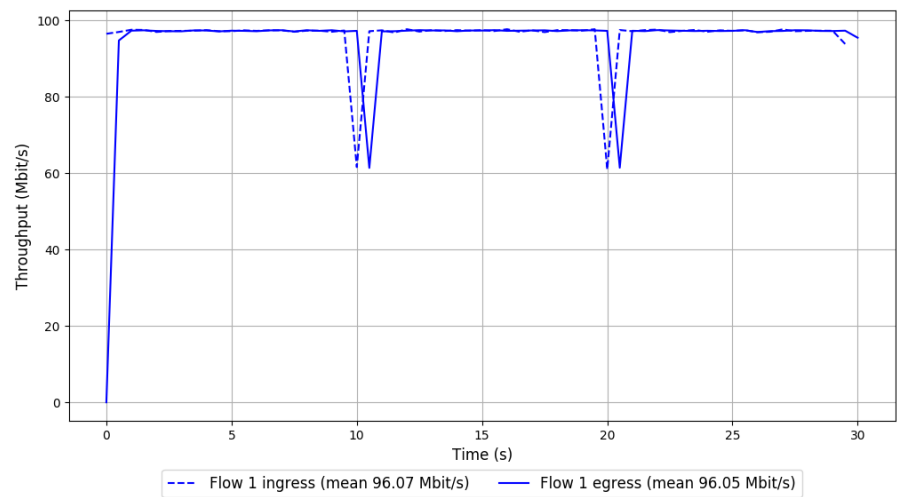
-- Flow 1:

Average throughput: 96.05 Mbit/s

95th percentile per-packet one-way delay: 10.034 ms

Loss rate: 0.00%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-08-28 04:53:45

End at: 2018-08-28 04:54:15

Local clock offset: 11.686 ms

Remote clock offset: 0.42 ms

Below is generated by plot.py at 2018-08-28 05:02:18

Datalink statistics

-- Total of 1 flow:

Average throughput: 96.08 Mbit/s

95th percentile per-packet one-way delay: 7.169 ms

Loss rate: 0.00%

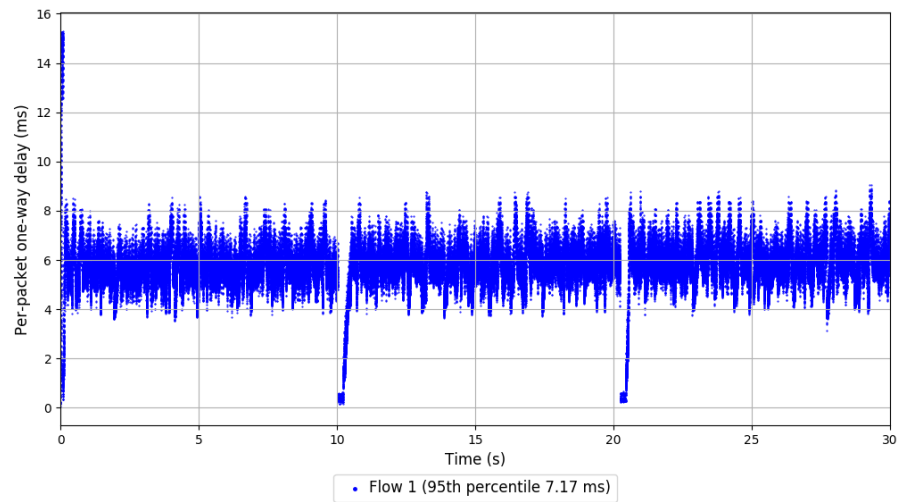
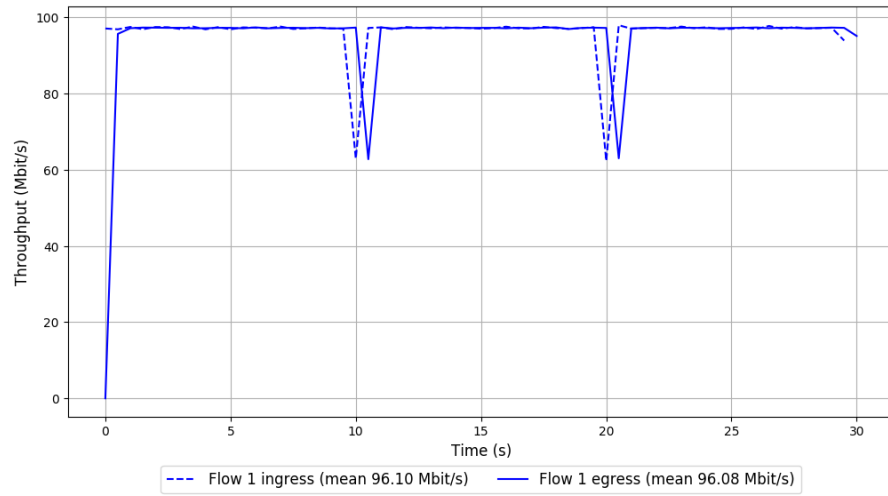
-- Flow 1:

Average throughput: 96.08 Mbit/s

95th percentile per-packet one-way delay: 7.169 ms

Loss rate: 0.00%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-08-28 04:58:12

End at: 2018-08-28 04:58:42

Local clock offset: 10.736 ms

Remote clock offset: 0.41 ms

Below is generated by plot.py at 2018-08-28 05:02:18

Datalink statistics

-- Total of 1 flow:

Average throughput: 95.94 Mbit/s

95th percentile per-packet one-way delay: 11.584 ms

Loss rate: 0.00%

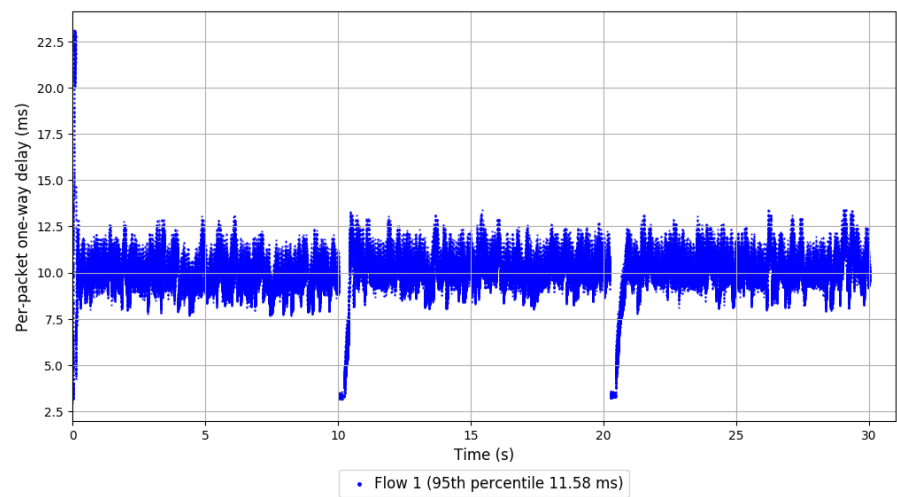
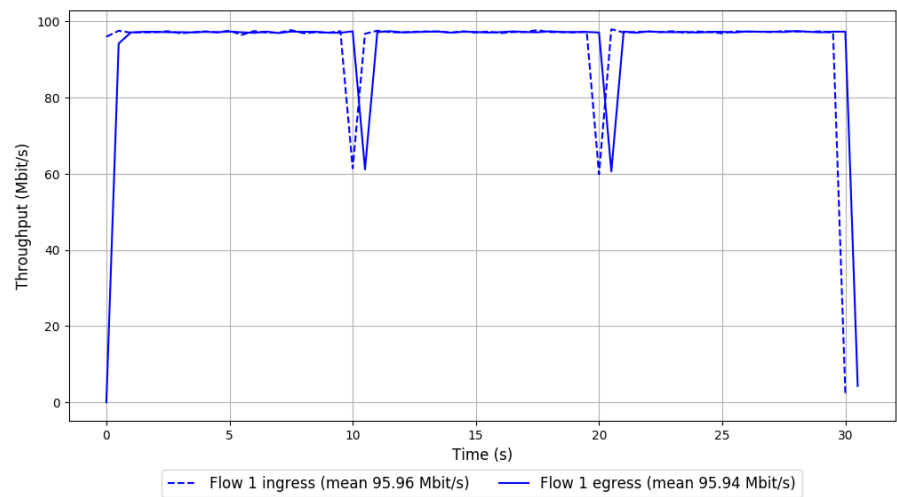
-- Flow 1:

Average throughput: 95.94 Mbit/s

95th percentile per-packet one-way delay: 11.584 ms

Loss rate: 0.00%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-08-28 04:48:11

End at: 2018-08-28 04:48:41

Local clock offset: 11.026 ms

Remote clock offset: 0.317 ms

Below is generated by plot.py at 2018-08-28 05:02:20

Datalink statistics

-- Total of 1 flow:

Average throughput: 97.23 Mbit/s

95th percentile per-packet one-way delay: 29.947 ms

Loss rate: 0.01%

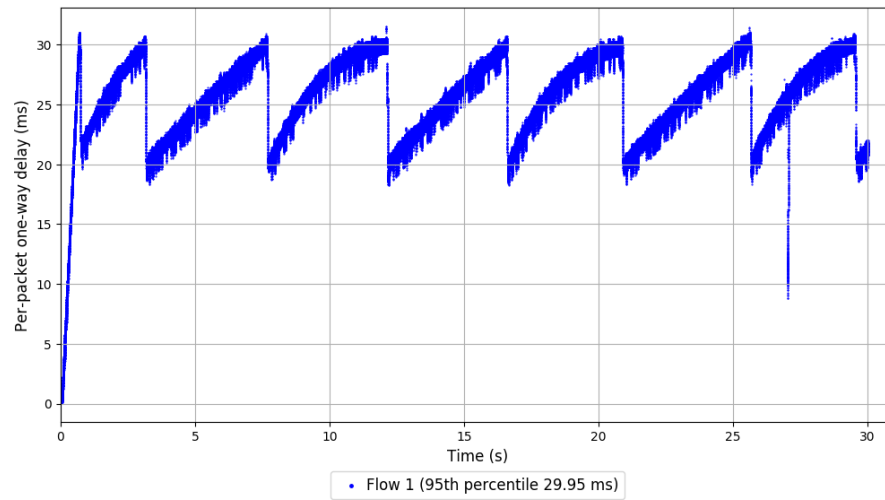
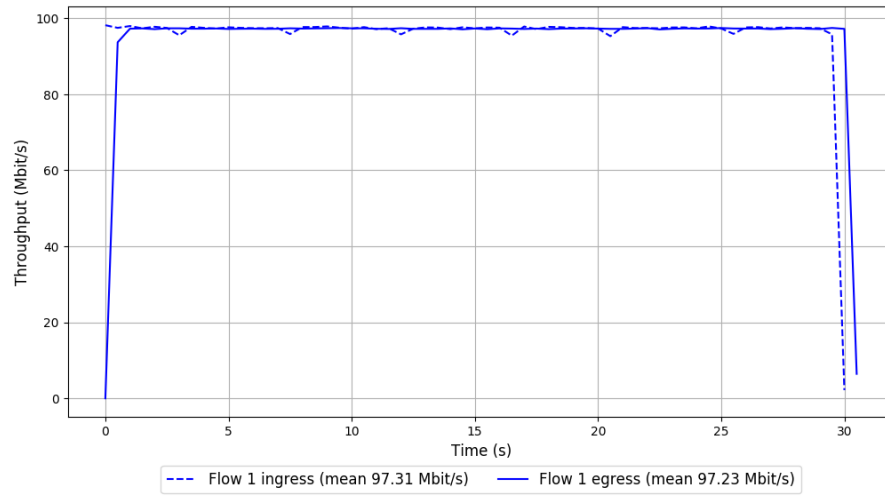
-- Flow 1:

Average throughput: 97.23 Mbit/s

95th percentile per-packet one-way delay: 29.947 ms

Loss rate: 0.01%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-08-28 04:52:38

End at: 2018-08-28 04:53:08

Local clock offset: 10.006 ms

Remote clock offset: 0.379 ms

Below is generated by plot.py at 2018-08-28 05:02:21

Datalink statistics

-- Total of 1 flow:

Average throughput: 97.22 Mbit/s

95th percentile per-packet one-way delay: 31.370 ms

Loss rate: 0.02%

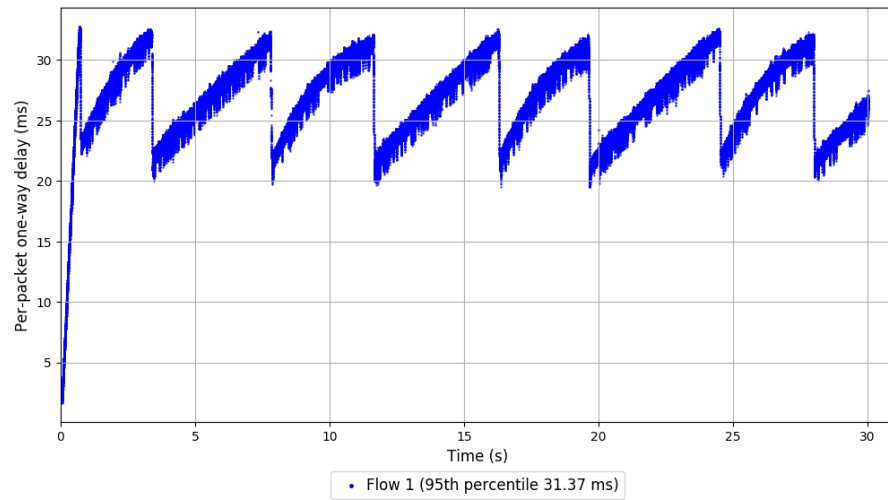
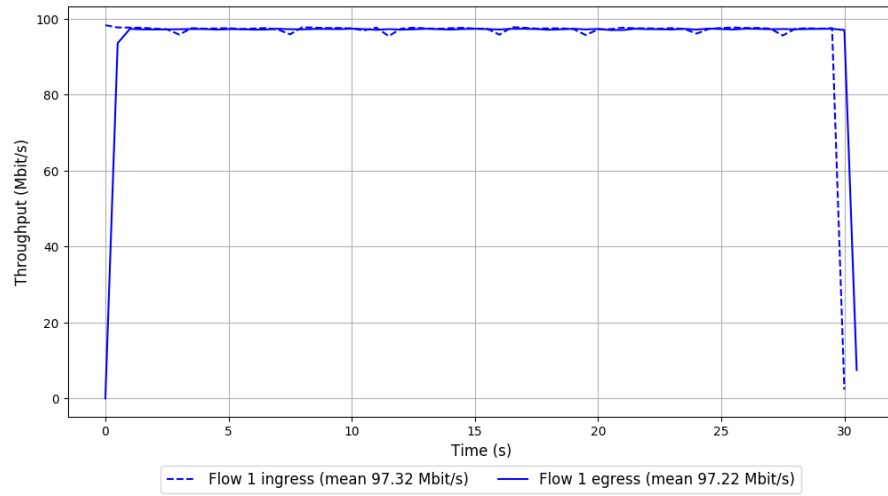
-- Flow 1:

Average throughput: 97.22 Mbit/s

95th percentile per-packet one-way delay: 31.370 ms

Loss rate: 0.02%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-08-28 04:57:05

End at: 2018-08-28 04:57:35

Local clock offset: 10.614 ms

Remote clock offset: 0.436 ms

Below is generated by plot.py at 2018-08-28 05:02:21

Datalink statistics

-- Total of 1 flow:

Average throughput: 97.13 Mbit/s

95th percentile per-packet one-way delay: 32.594 ms

Loss rate: 0.02%

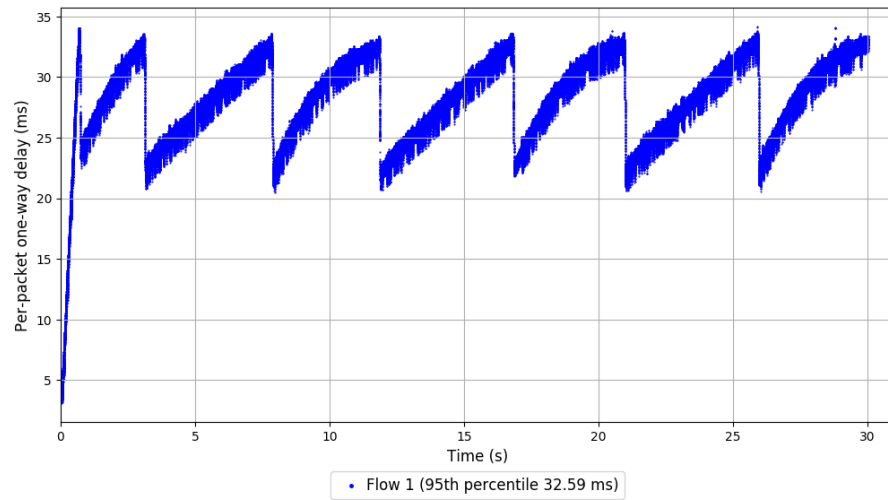
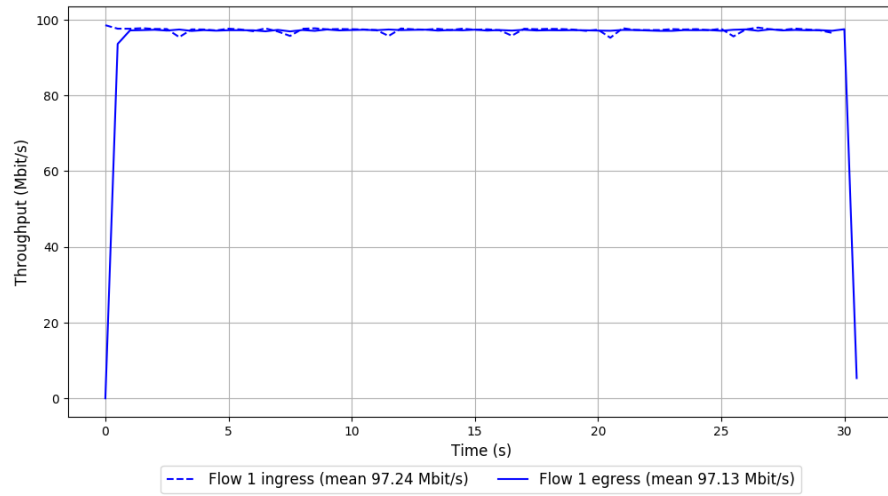
-- Flow 1:

Average throughput: 97.13 Mbit/s

95th percentile per-packet one-way delay: 32.594 ms

Loss rate: 0.02%

Run 3: Report of TCP Cubic — Data Link

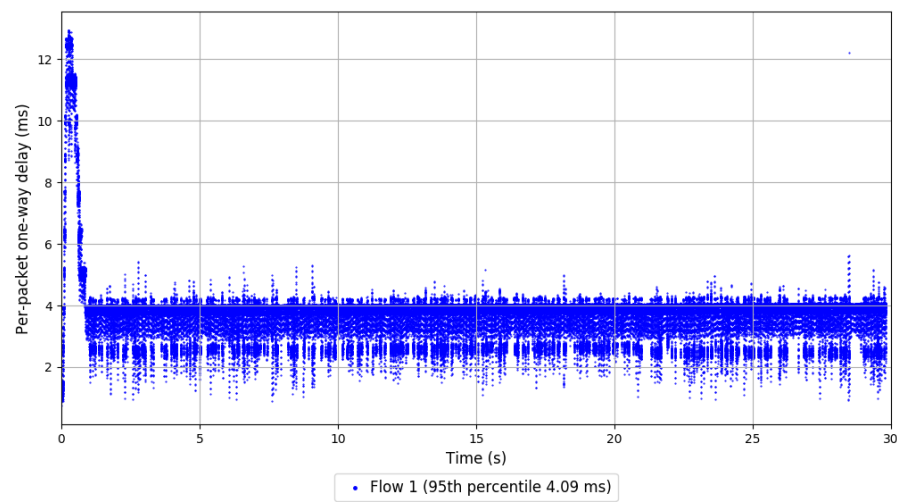
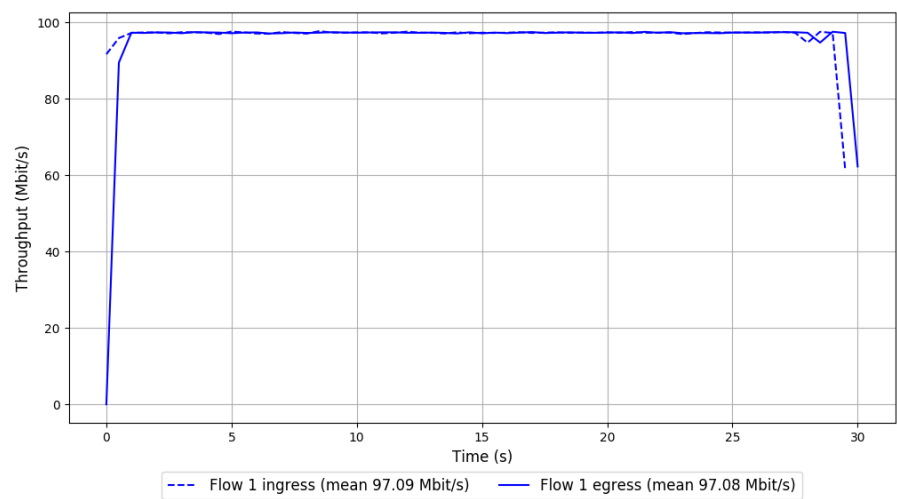


```
Run 1: Statistics of Indigo

Start at: 2018-08-28 04:51:29
End at: 2018-08-28 04:51:59
Local clock offset: 10.663 ms
Remote clock offset: 0.411 ms

# Below is generated by plot.py at 2018-08-28 05:02:21
# Datalink statistics
-- Total of 1 flow:
Average throughput: 97.08 Mbit/s
95th percentile per-packet one-way delay: 4.095 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 97.08 Mbit/s
95th percentile per-packet one-way delay: 4.095 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-08-28 04:55:56

End at: 2018-08-28 04:56:26

Local clock offset: 11.219 ms

Remote clock offset: 0.359 ms

Below is generated by plot.py at 2018-08-28 05:02:21

Datalink statistics

-- Total of 1 flow:

Average throughput: 97.03 Mbit/s

95th percentile per-packet one-way delay: 5.252 ms

Loss rate: 0.00%

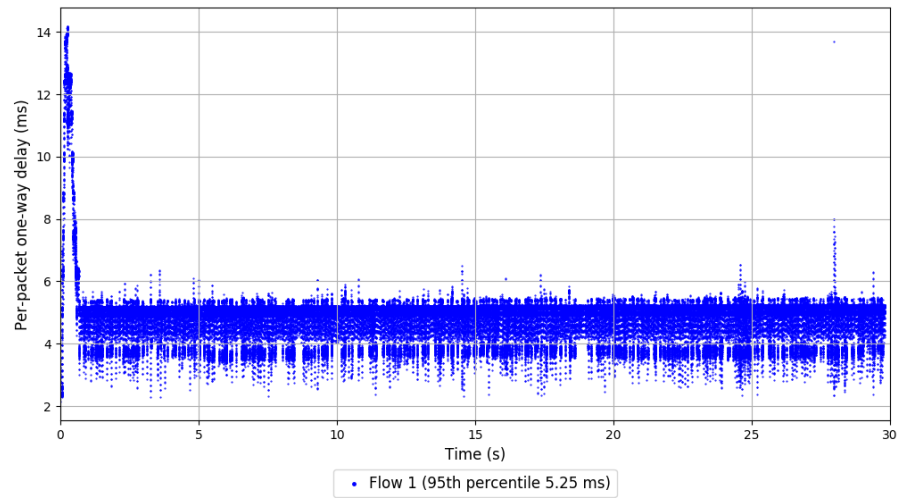
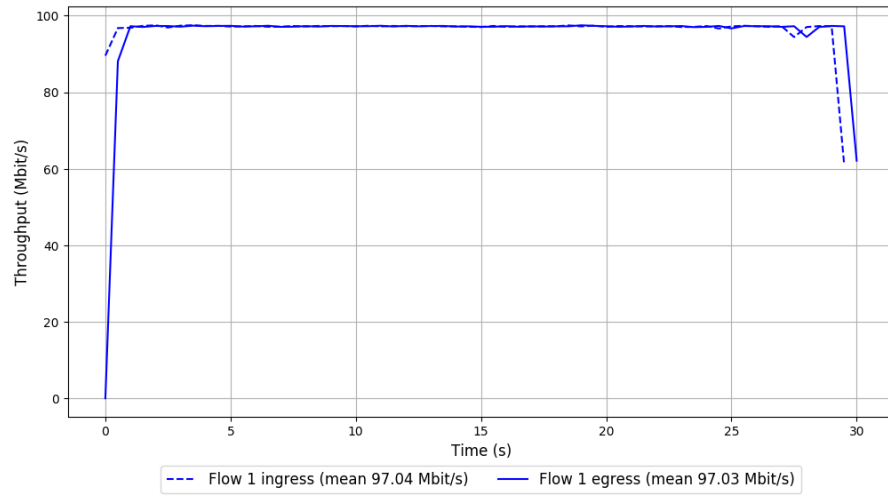
-- Flow 1:

Average throughput: 97.03 Mbit/s

95th percentile per-packet one-way delay: 5.252 ms

Loss rate: 0.00%

Run 2: Report of Indigo — Data Link

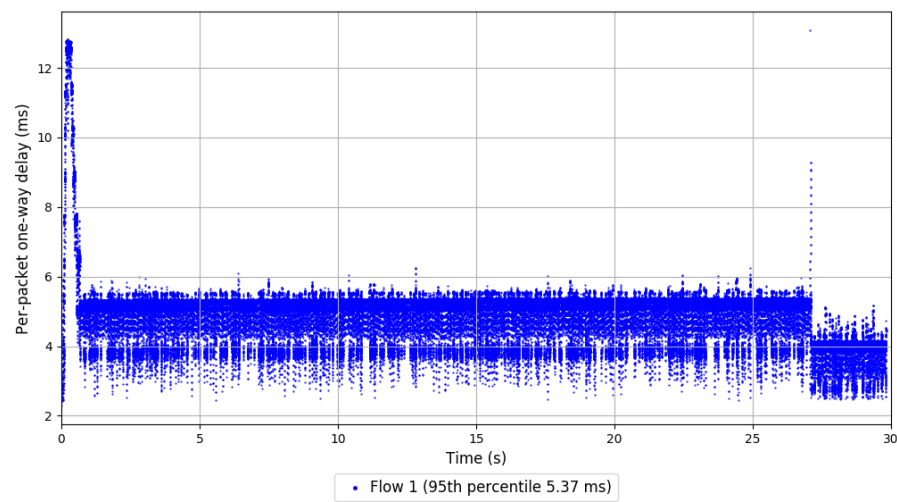
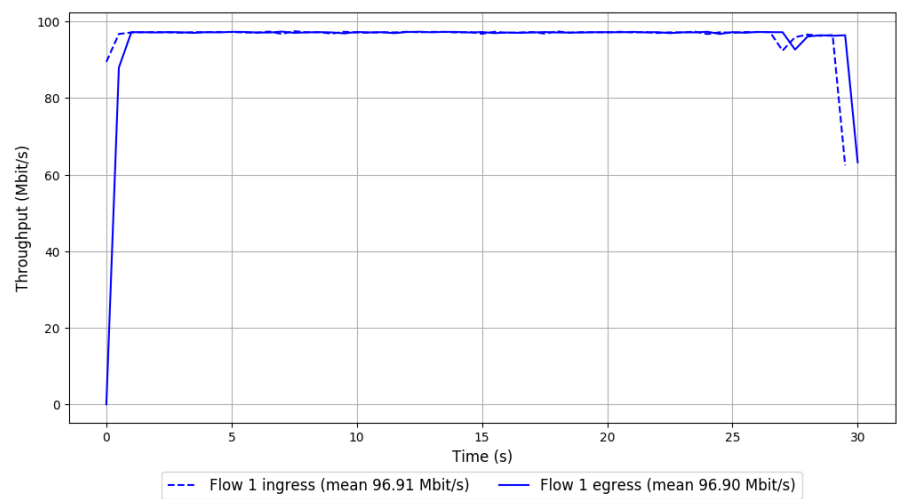


Run 3: Statistics of Indigo

Start at: 2018-08-28 05:00:23
End at: 2018-08-28 05:00:53
Local clock offset: 11.757 ms
Remote clock offset: 0.426 ms

Below is generated by plot.py at 2018-08-28 05:02:27
Datalink statistics
-- Total of 1 flow:
Average throughput: 96.90 Mbit/s
95th percentile per-packet one-way delay: 5.371 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 96.90 Mbit/s
95th percentile per-packet one-way delay: 5.371 ms
Loss rate: 0.00%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Muses

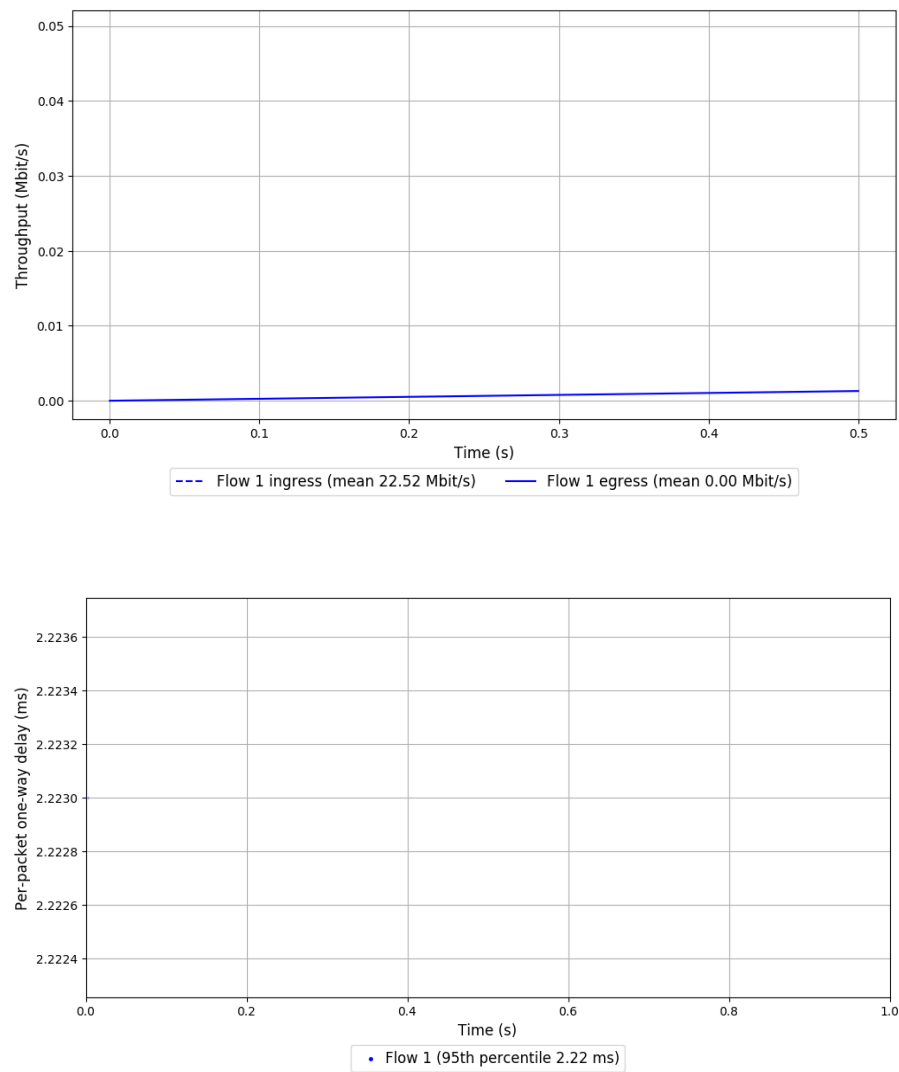
Start at: 2018-08-28 04:50:26

End at: 2018-08-28 04:50:56

Local clock offset: 10.502 ms

Remote clock offset: 0.386 ms

Run 1: Report of Muses — Data Link



Run 2: Statistics of Muses

Start at: 2018-08-28 04:54:52

End at: 2018-08-28 04:55:22

Local clock offset: 10.291 ms

Remote clock offset: 0.365 ms

Below is generated by plot.py at 2018-08-28 05:02:27

Datalink statistics

-- Total of 1 flow:

Average throughput: 11.37 Mbit/s

95th percentile per-packet one-way delay: 4.046 ms

Loss rate: 51.36%

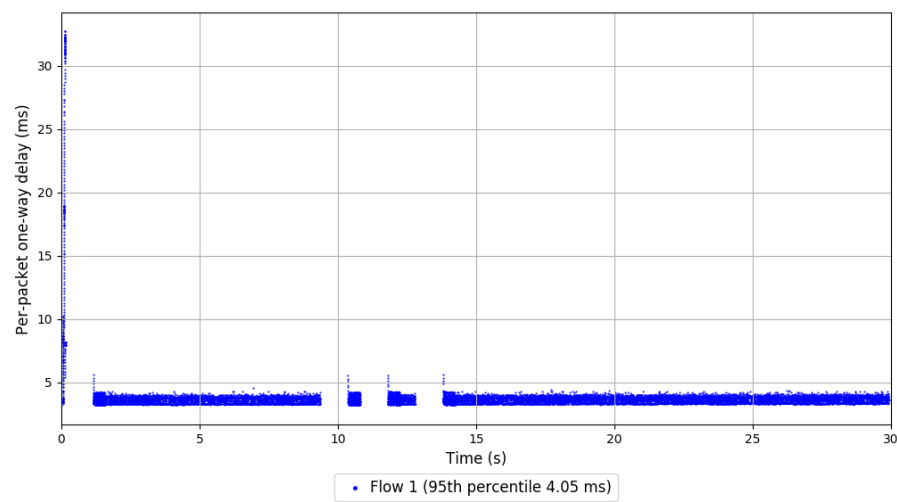
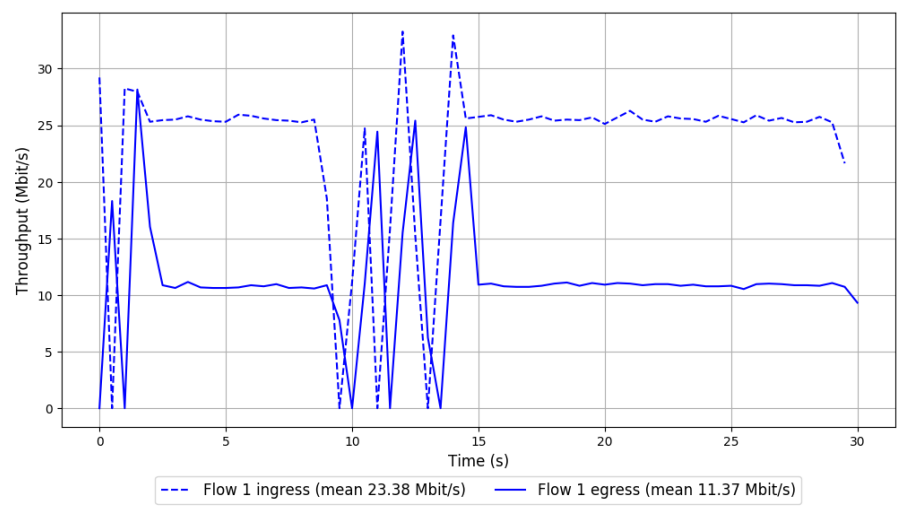
-- Flow 1:

Average throughput: 11.37 Mbit/s

95th percentile per-packet one-way delay: 4.046 ms

Loss rate: 51.36%

Run 2: Report of Muses — Data Link



Run 3: Statistics of Muses

Start at: 2018-08-28 04:59:19

End at: 2018-08-28 04:59:49

Local clock offset: 10.851 ms

Remote clock offset: 0.41 ms

Below is generated by plot.py at 2018-08-28 05:02:27

Datalink statistics

-- Total of 1 flow:

Average throughput: 11.50 Mbit/s

95th percentile per-packet one-way delay: 4.197 ms

Loss rate: 47.62%

-- Flow 1:

Average throughput: 11.50 Mbit/s

95th percentile per-packet one-way delay: 4.197 ms

Loss rate: 47.62%

Run 3: Report of Muses — Data Link

