

Pantheon Report

Generated at 2018-08-28 09:48:17 (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.

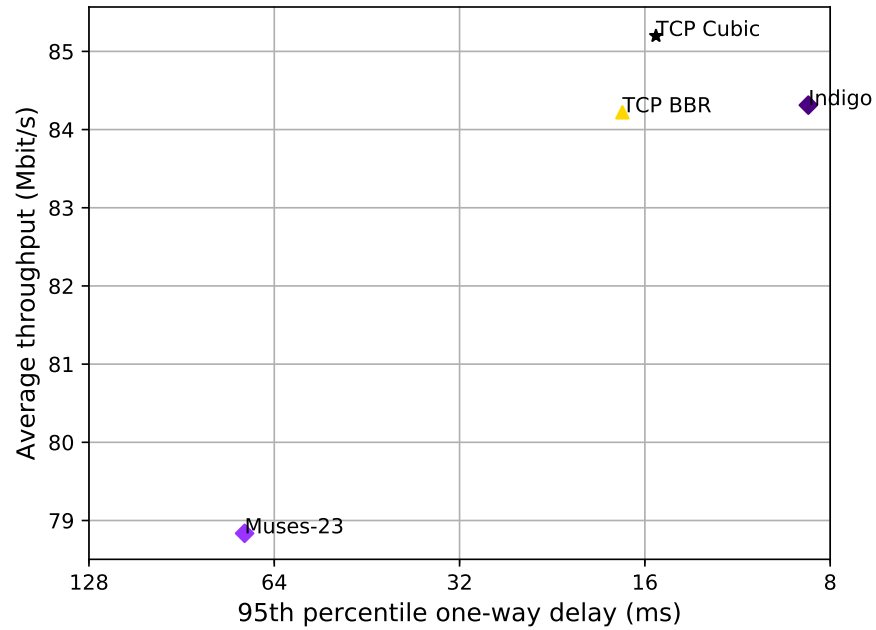
System info:

```
Linux 4.15.0-1020-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
```

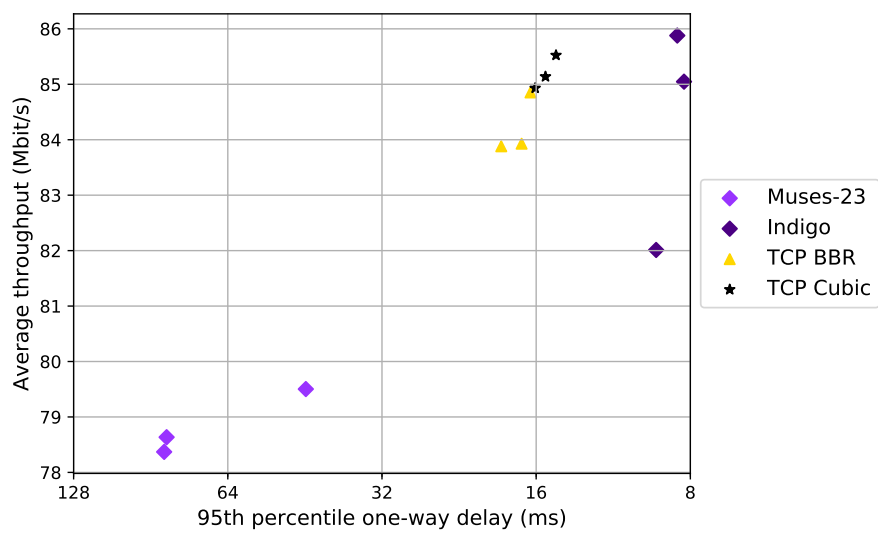
Git summary:

```
branch: muses-23 @ 88af05c5b0b7531637ca401951507a2fde628df6
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf5e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ b261c9e99c63be452bc16f94ce0caa99a4c9d39a
third_party/pantheon-tunnel @ cbfce6db5ff5740dafa1771f813cd646339e1952
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	84.22	17.41	0.17
TCP Cubic	3	85.20	15.35	0.06
Indigo	3	84.31	8.68	0.02
Muses-23	3	78.83	71.51	0.17

Run 1: Statistics of TCP BBR

Start at: 2018-08-28 09:35:46

End at: 2018-08-28 09:36:16

Local clock offset: -1.802 ms

Remote clock offset: 0.073 ms

Below is generated by plot.py at 2018-08-28 09:47:39

Datalink statistics

-- Total of 1 flow:

Average throughput: 83.93 Mbit/s

95th percentile per-packet one-way delay: 17.082 ms

Loss rate: 0.21%

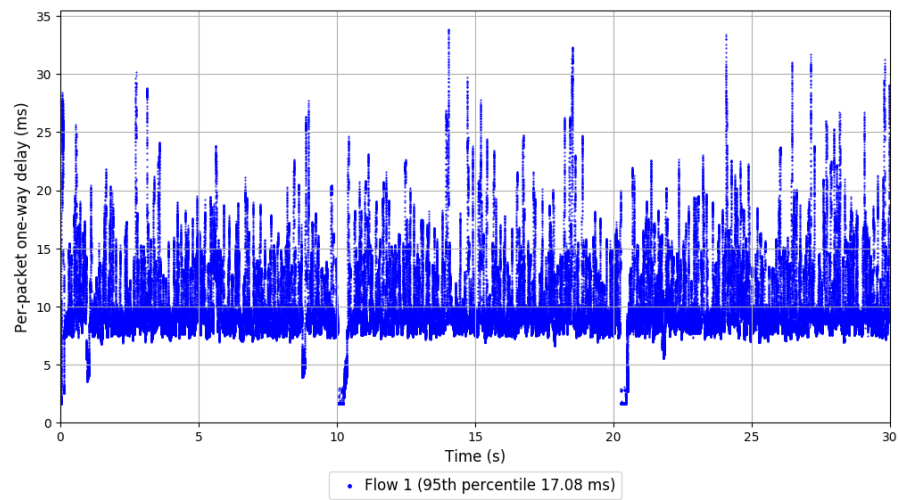
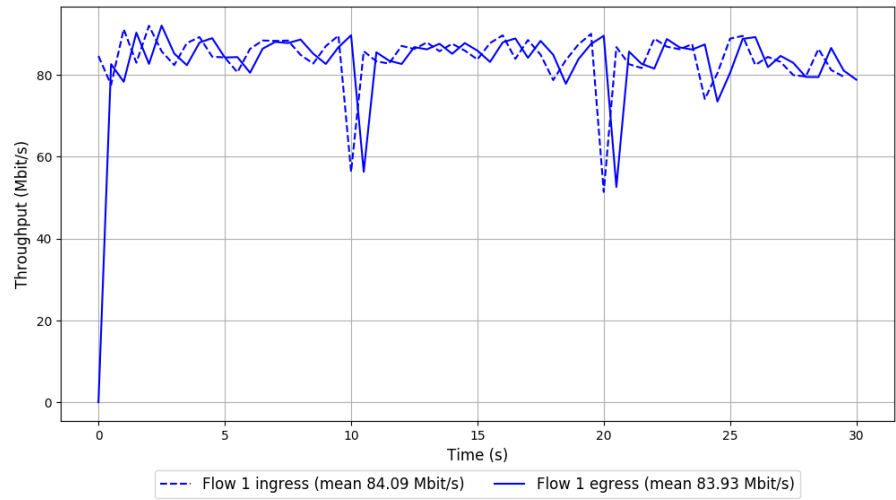
-- Flow 1:

Average throughput: 83.93 Mbit/s

95th percentile per-packet one-way delay: 17.082 ms

Loss rate: 0.21%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-08-28 09:40:15

End at: 2018-08-28 09:40:45

Local clock offset: -1.095 ms

Remote clock offset: 0.18 ms

Below is generated by plot.py at 2018-08-28 09:47:39

Datalink statistics

-- Total of 1 flow:

Average throughput: 83.88 Mbit/s

95th percentile per-packet one-way delay: 18.719 ms

Loss rate: 0.14%

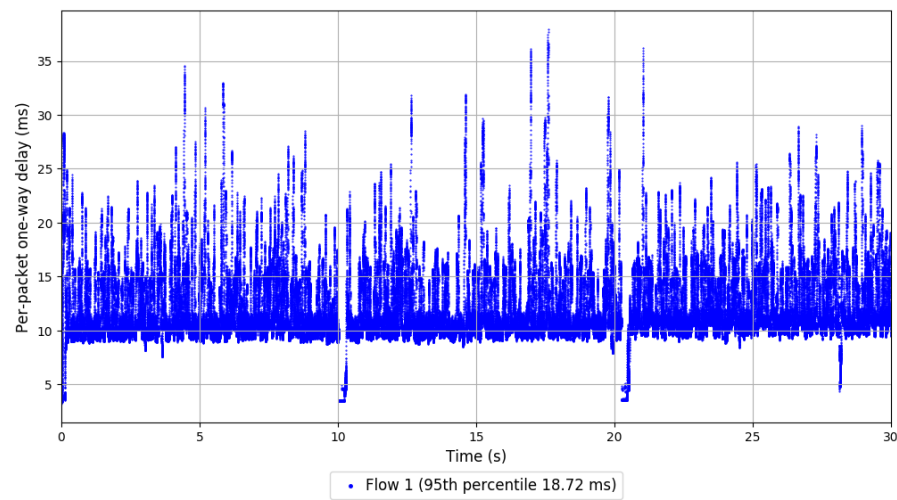
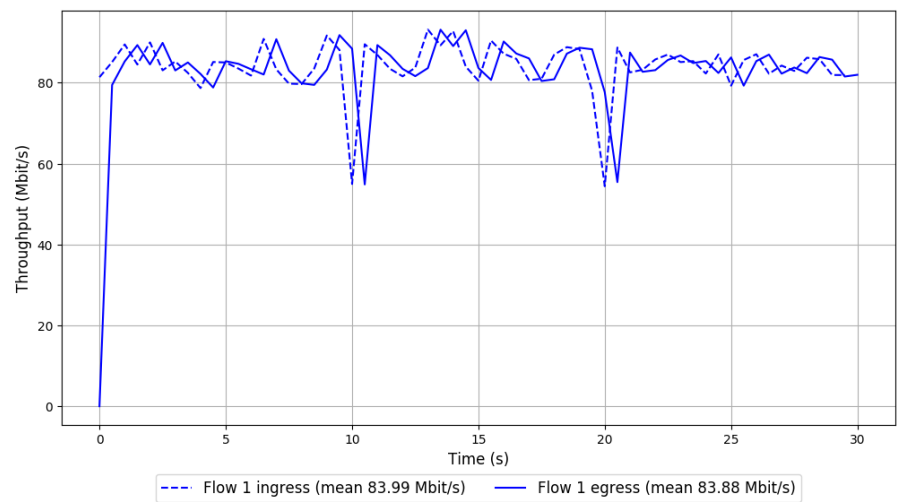
-- Flow 1:

Average throughput: 83.88 Mbit/s

95th percentile per-packet one-way delay: 18.719 ms

Loss rate: 0.14%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-08-28 09:44:44

End at: 2018-08-28 09:45:14

Local clock offset: -4.624 ms

Remote clock offset: 0.214 ms

Below is generated by plot.py at 2018-08-28 09:47:39

Datalink statistics

-- Total of 1 flow:

Average throughput: 84.85 Mbit/s

95th percentile per-packet one-way delay: 16.414 ms

Loss rate: 0.15%

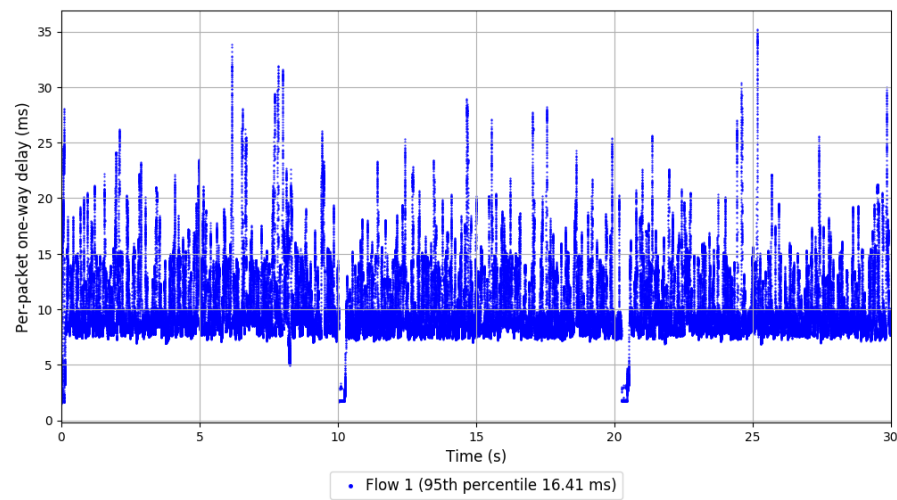
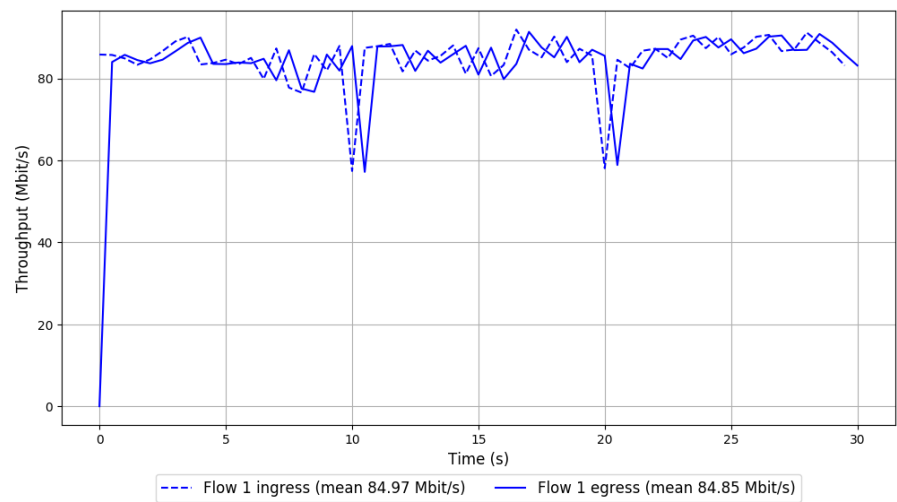
-- Flow 1:

Average throughput: 84.85 Mbit/s

95th percentile per-packet one-way delay: 16.414 ms

Loss rate: 0.15%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-08-28 09:34:39

End at: 2018-08-28 09:35:09

Local clock offset: -1.108 ms

Remote clock offset: 0.147 ms

Below is generated by plot.py at 2018-08-28 09:47:41

Datalink statistics

-- Total of 1 flow:

Average throughput: 85.14 Mbit/s

95th percentile per-packet one-way delay: 15.344 ms

Loss rate: 0.05%

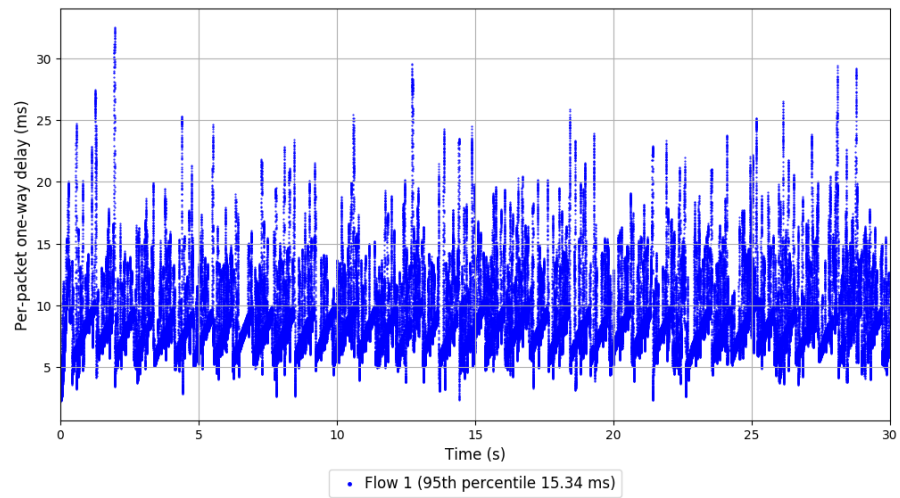
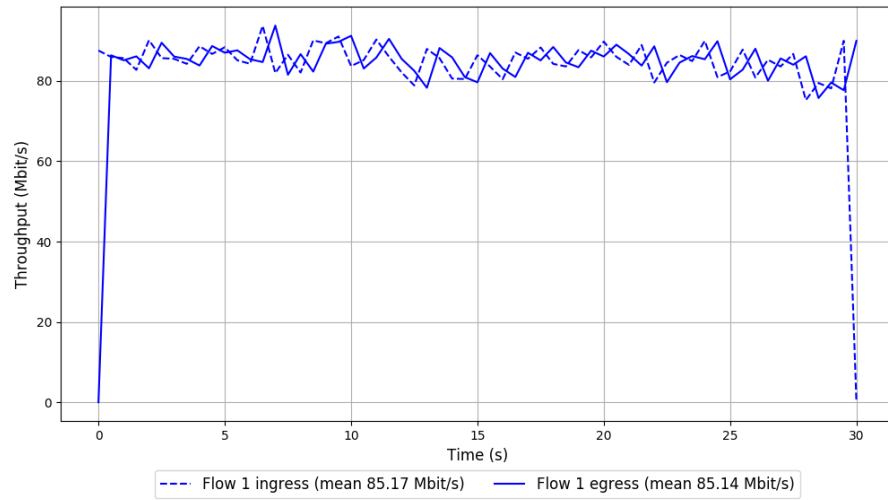
-- Flow 1:

Average throughput: 85.14 Mbit/s

95th percentile per-packet one-way delay: 15.344 ms

Loss rate: 0.05%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-08-28 09:39:08

End at: 2018-08-28 09:39:38

Local clock offset: -1.091 ms

Remote clock offset: 0.171 ms

Below is generated by plot.py at 2018-08-28 09:47:41

Datalink statistics

-- Total of 1 flow:

Average throughput: 84.93 Mbit/s

95th percentile per-packet one-way delay: 16.071 ms

Loss rate: 0.07%

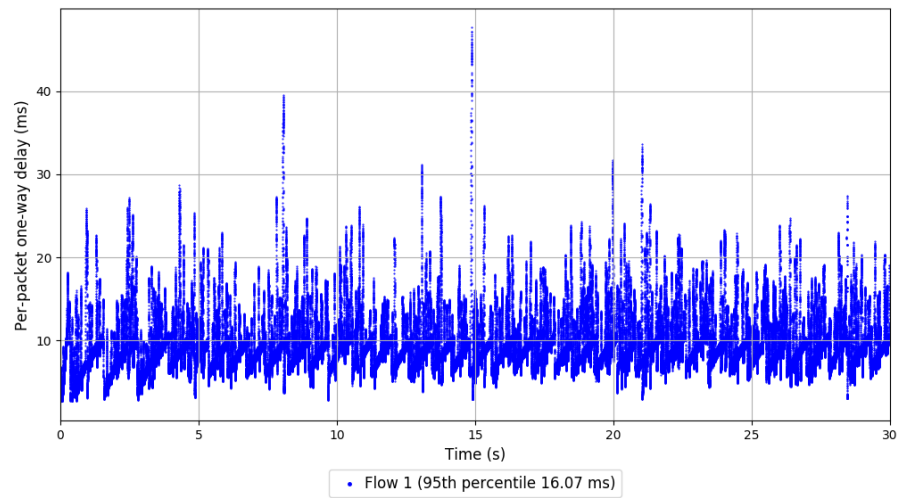
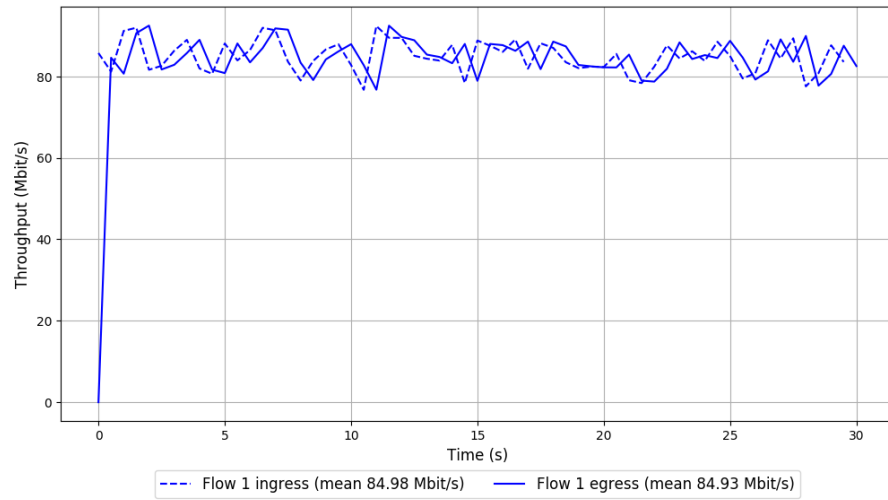
-- Flow 1:

Average throughput: 84.93 Mbit/s

95th percentile per-packet one-way delay: 16.071 ms

Loss rate: 0.07%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-08-28 09:43:37

End at: 2018-08-28 09:44:07

Local clock offset: -4.204 ms

Remote clock offset: 0.225 ms

Below is generated by plot.py at 2018-08-28 09:47:41

Datalink statistics

-- Total of 1 flow:

Average throughput: 85.52 Mbit/s

95th percentile per-packet one-way delay: 14.634 ms

Loss rate: 0.05%

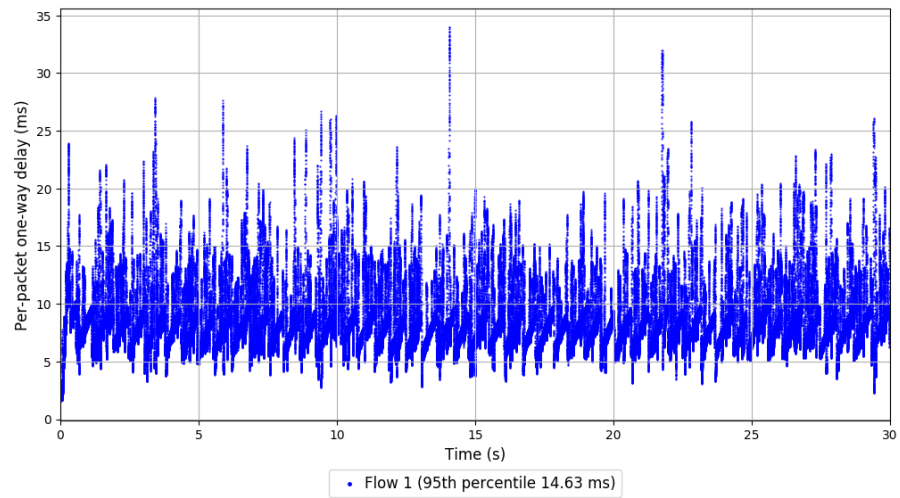
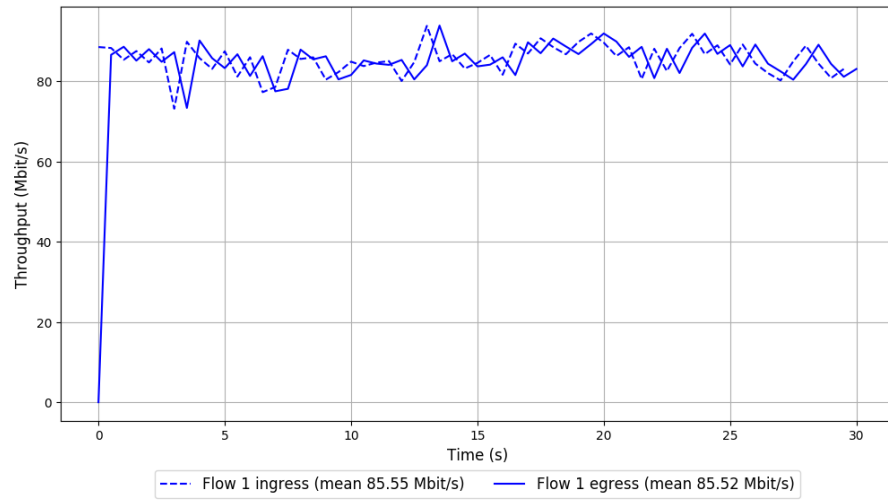
-- Flow 1:

Average throughput: 85.52 Mbit/s

95th percentile per-packet one-way delay: 14.634 ms

Loss rate: 0.05%

Run 3: Report of TCP Cubic — Data Link

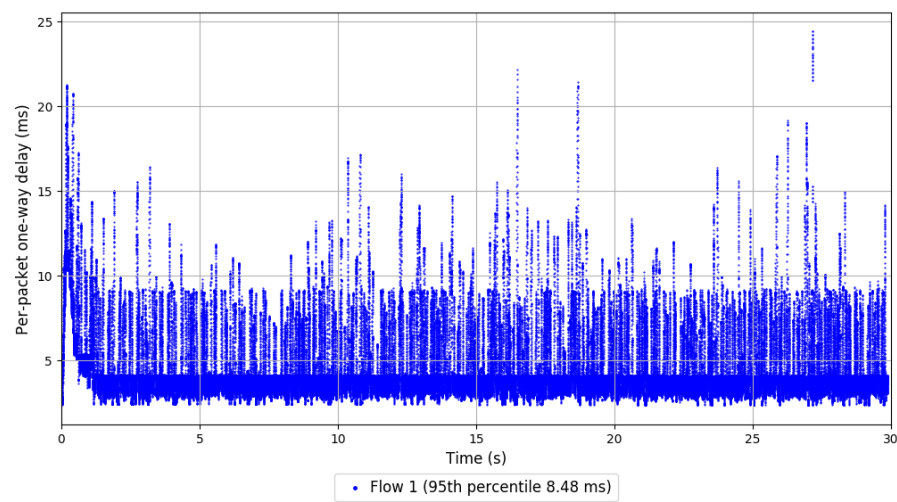
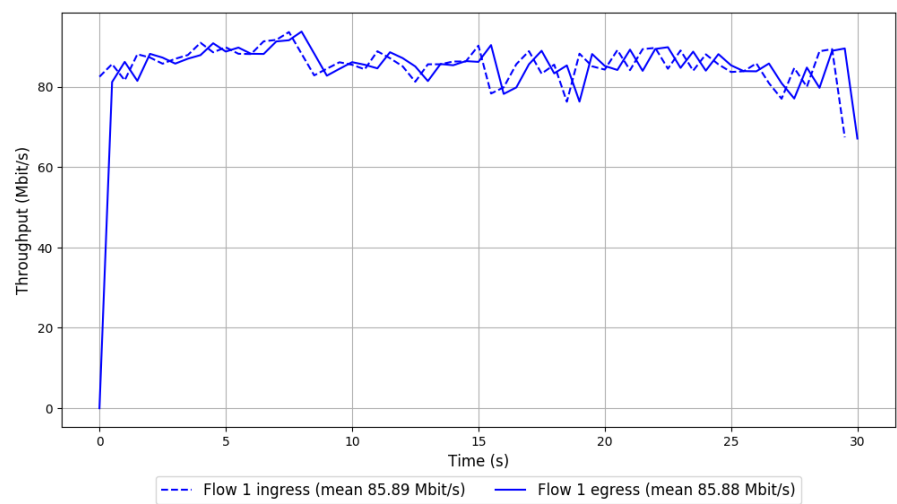


```
Run 1: Statistics of Indigo

Start at: 2018-08-28 09:33:31
End at: 2018-08-28 09:34:01
Local clock offset: -1.201 ms
Remote clock offset: 0.06 ms

# Below is generated by plot.py at 2018-08-28 09:47:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.88 Mbit/s
95th percentile per-packet one-way delay: 8.484 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 85.88 Mbit/s
95th percentile per-packet one-way delay: 8.484 ms
Loss rate: 0.02%
```


Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-08-28 09:38:00

End at: 2018-08-28 09:38:30

Local clock offset: -0.121 ms

Remote clock offset: 0.165 ms

Below is generated by plot.py at 2018-08-28 09:47:42

Datalink statistics

-- Total of 1 flow:

Average throughput: 82.01 Mbit/s

95th percentile per-packet one-way delay: 9.330 ms

Loss rate: 0.02%

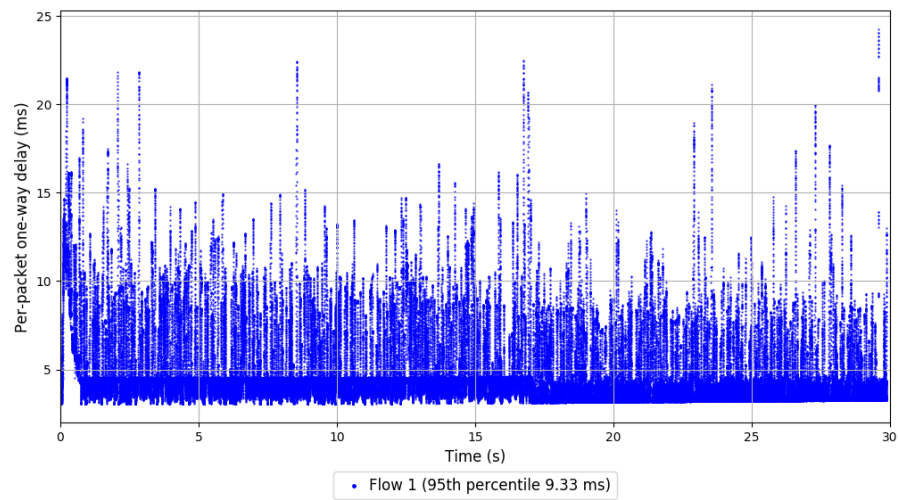
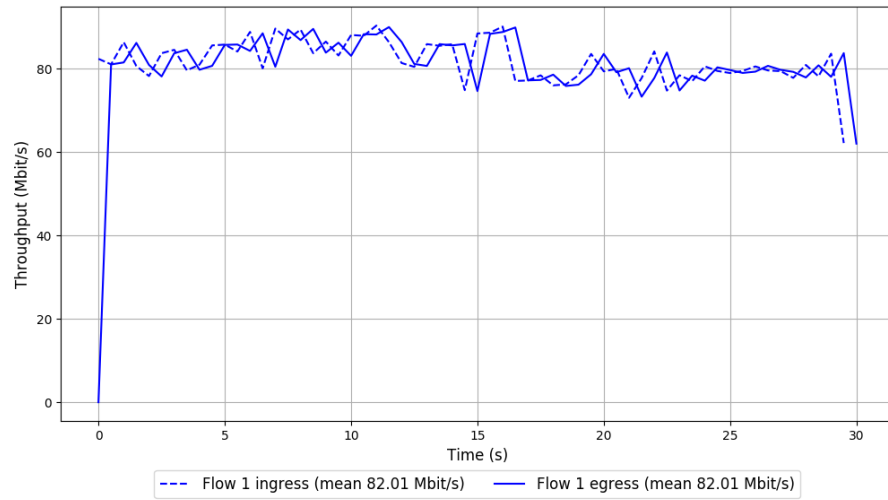
-- Flow 1:

Average throughput: 82.01 Mbit/s

95th percentile per-packet one-way delay: 9.330 ms

Loss rate: 0.02%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-08-28 09:42:29

End at: 2018-08-28 09:42:59

Local clock offset: -3.844 ms

Remote clock offset: 0.158 ms

Below is generated by plot.py at 2018-08-28 09:48:12

Datalink statistics

-- Total of 1 flow:

Average throughput: 85.05 Mbit/s

95th percentile per-packet one-way delay: 8.231 ms

Loss rate: 0.02%

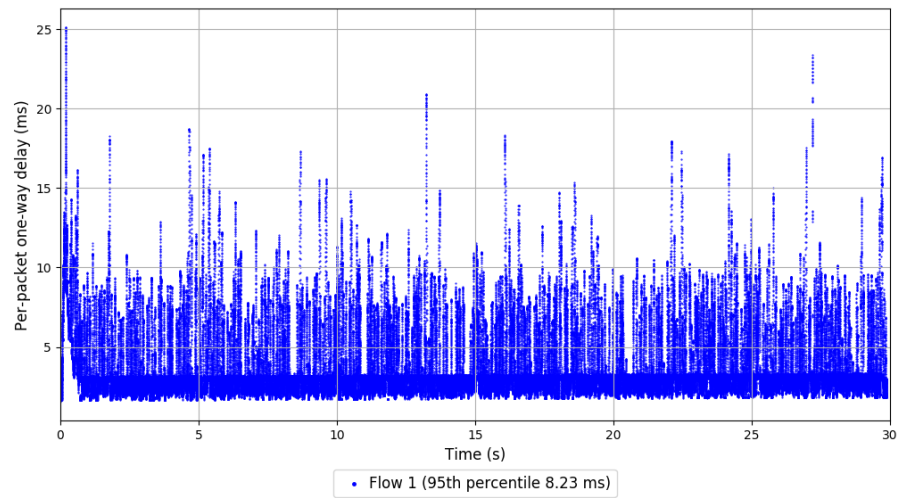
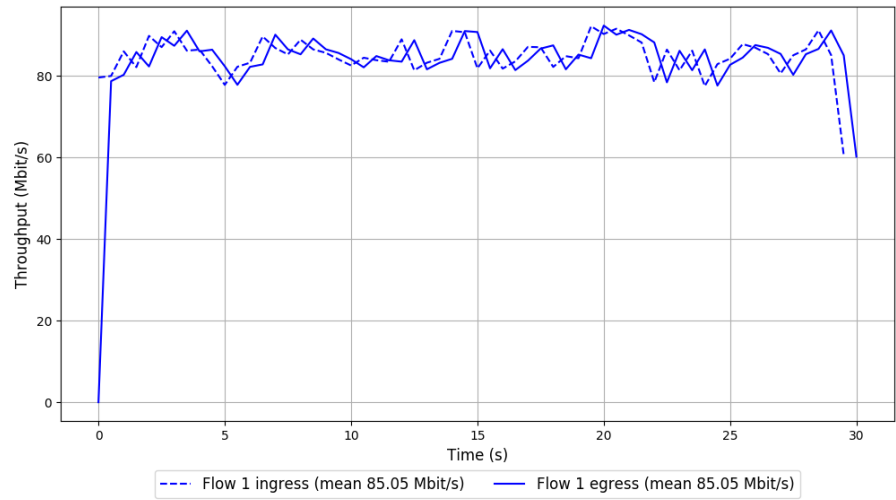
-- Flow 1:

Average throughput: 85.05 Mbit/s

95th percentile per-packet one-way delay: 8.231 ms

Loss rate: 0.02%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Muses-23

Start at: 2018-08-28 09:36:53

End at: 2018-08-28 09:37:23

Local clock offset: -0.957 ms

Remote clock offset: 0.147 ms

Below is generated by plot.py at 2018-08-28 09:48:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 79.50 Mbit/s

95th percentile per-packet one-way delay: 45.064 ms

Loss rate: 0.09%

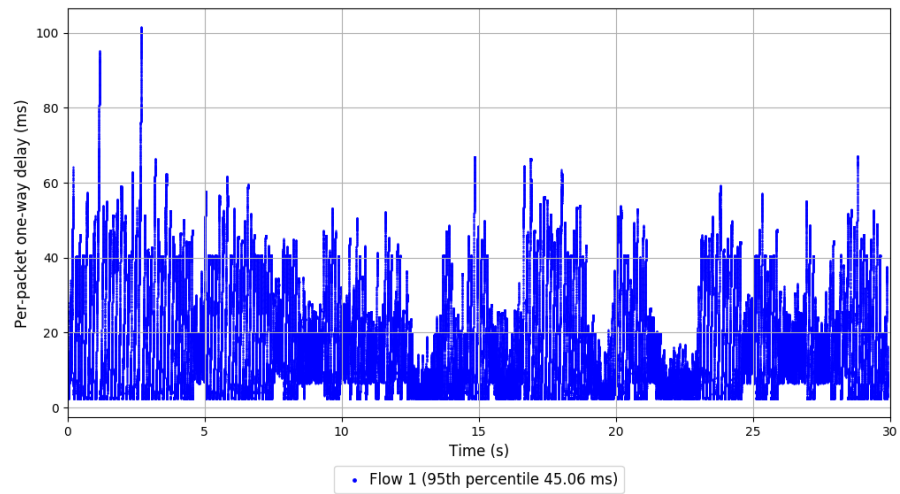
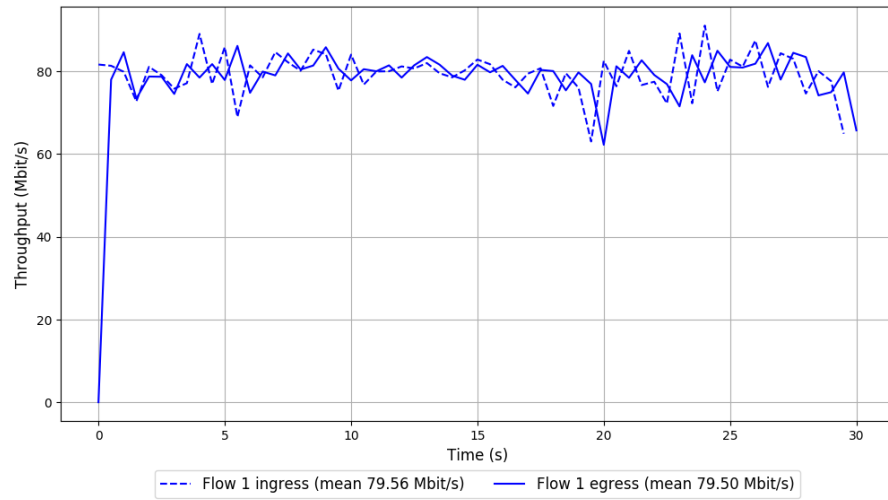
-- Flow 1:

Average throughput: 79.50 Mbit/s

95th percentile per-packet one-way delay: 45.064 ms

Loss rate: 0.09%

Run 1: Report of Muses-23 — Data Link



Run 2: Statistics of Muses-23

Start at: 2018-08-28 09:41:22

End at: 2018-08-28 09:41:52

Local clock offset: -3.247 ms

Remote clock offset: 0.174 ms

Below is generated by plot.py at 2018-08-28 09:48:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 78.37 Mbit/s

95th percentile per-packet one-way delay: 85.205 ms

Loss rate: 0.05%

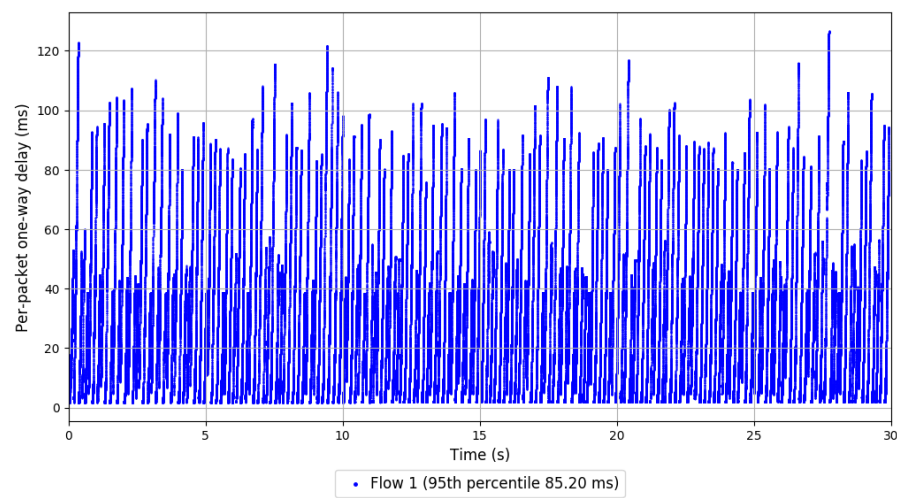
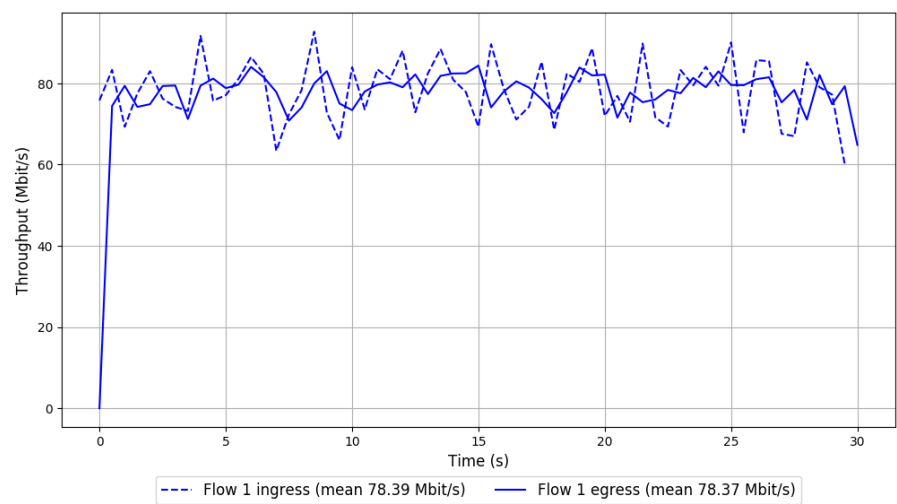
-- Flow 1:

Average throughput: 78.37 Mbit/s

95th percentile per-packet one-way delay: 85.205 ms

Loss rate: 0.05%

Run 2: Report of Muses-23 — Data Link



Run 3: Statistics of Muses-23

Start at: 2018-08-28 09:45:51

End at: 2018-08-28 09:46:21

Local clock offset: -4.926 ms

Remote clock offset: 0.169 ms

Below is generated by plot.py at 2018-08-28 09:48:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 78.63 Mbit/s

95th percentile per-packet one-way delay: 84.261 ms

Loss rate: 0.37%

-- Flow 1:

Average throughput: 78.63 Mbit/s

95th percentile per-packet one-way delay: 84.261 ms

Loss rate: 0.37%

Run 3: Report of Muses-23 — Data Link

