

Pantheon Report

Generated at 2018-09-05 06:14:55 (UTC).

Data path: GCE Sydney on **ens4** (*local*) → GCE Tokyo on **ens4** (*remote*).

Repeated the test of 4 congestion control schemes twice.

Each test lasted for 30 seconds running 1 flow.

NTP offsets were measured against `time.google.com` and have been applied to correct the timestamps in logs.

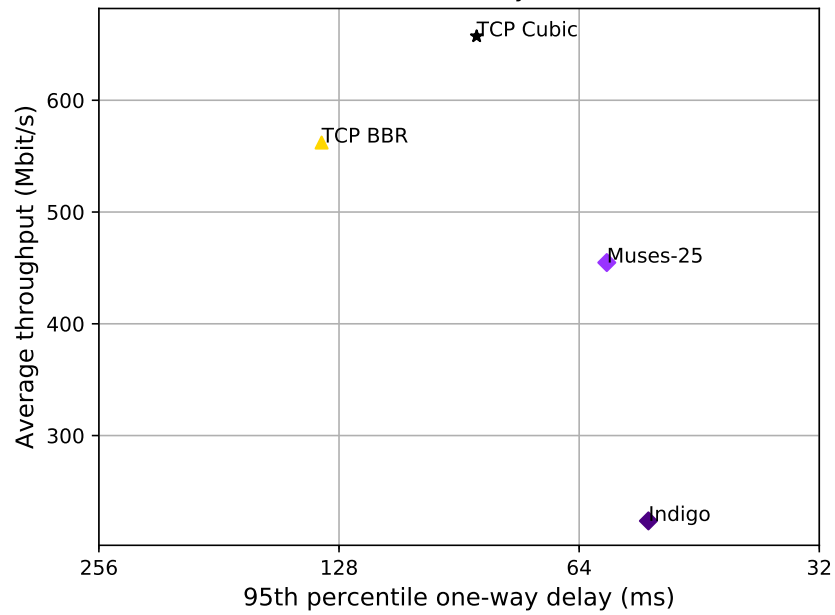
System info:

```
Linux 4.15.0-1018-gcp
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
```

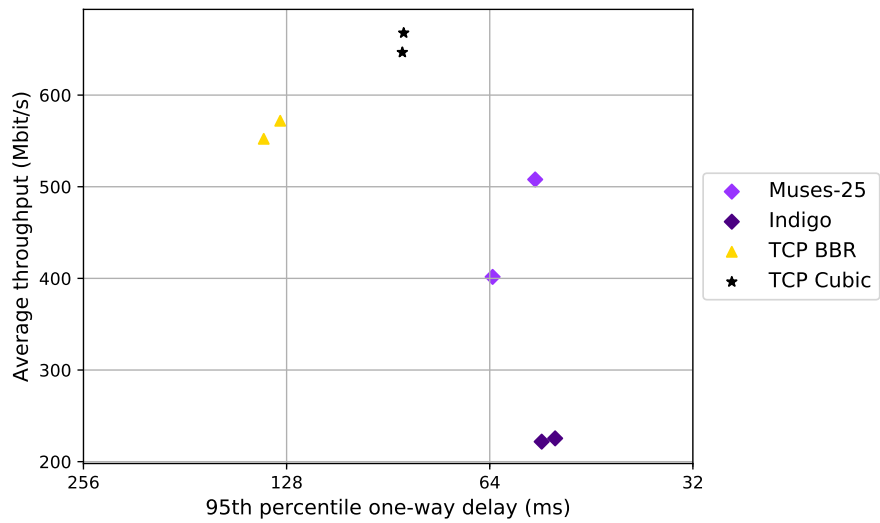
Git summary:

```
branch: muses @ 71e71e9a55b945431a7dea72180c1c9381097db9
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf5e58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 96fbc95fb38373d71fbc80c5a105e62e7636623b
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 GCE Sydney to GCE Tokyo, 2 runs of 30s each per scheme
(mean of all runs by scheme)



test from GCE Sydney to GCE Tokyo, 2 runs of 30s each per scheme



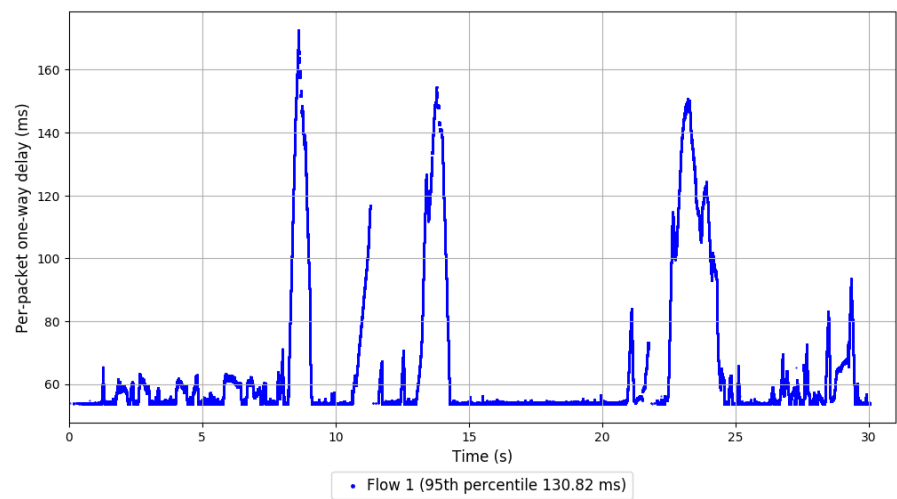
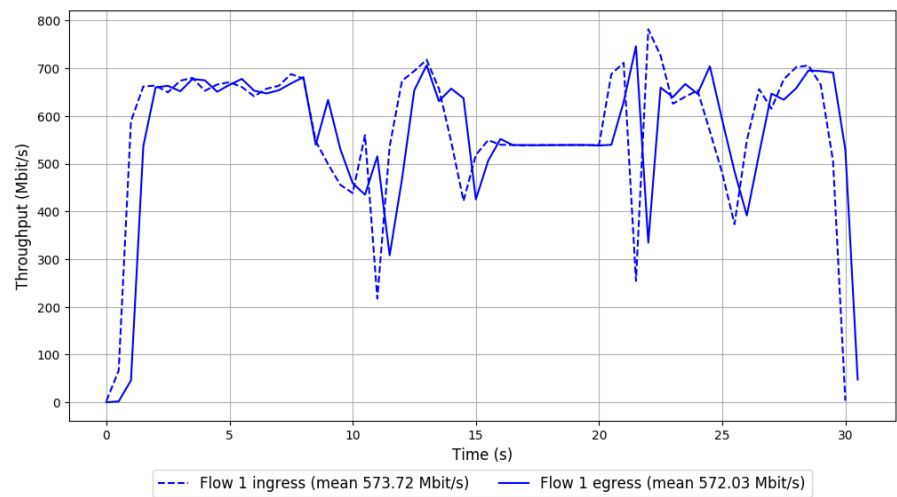
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	2	562.17	134.60	0.51
TCP Cubic	2	657.24	86.04	0.08
Indigo	2	223.63	52.40	0.00
Muses-25	2	454.77	59.09	0.00

Run 1: Statistics of TCP BBR

Start at: 2018-09-05 05:56:27
End at: 2018-09-05 05:56:57
Local clock offset: -0.054 ms
Remote clock offset: -0.019 ms

Below is generated by plot.py at 2018-09-05 06:14:44
Datalink statistics
-- Total of 1 flow:
Average throughput: 572.03 Mbit/s
95th percentile per-packet one-way delay: 130.817 ms
Loss rate: 0.30%
-- Flow 1:
Average throughput: 572.03 Mbit/s
95th percentile per-packet one-way delay: 130.817 ms
Loss rate: 0.30%

Run 1: Report of TCP BBR — Data Link

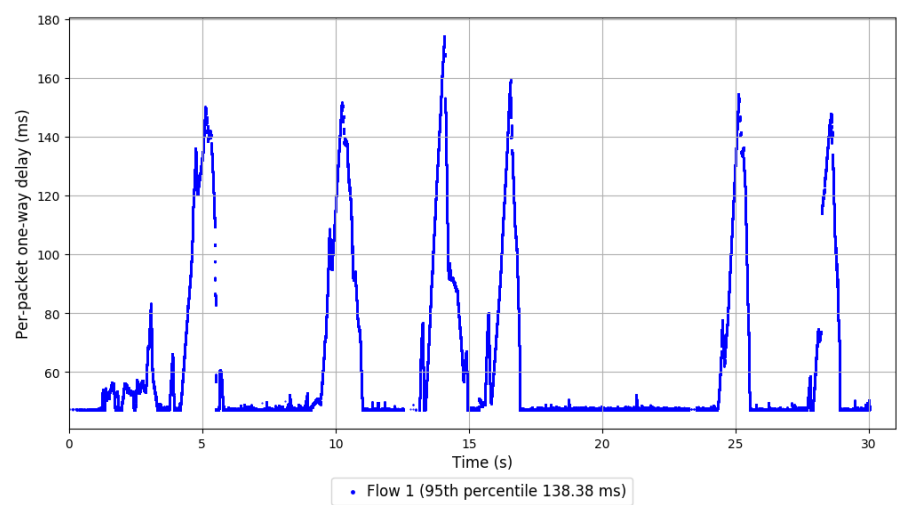
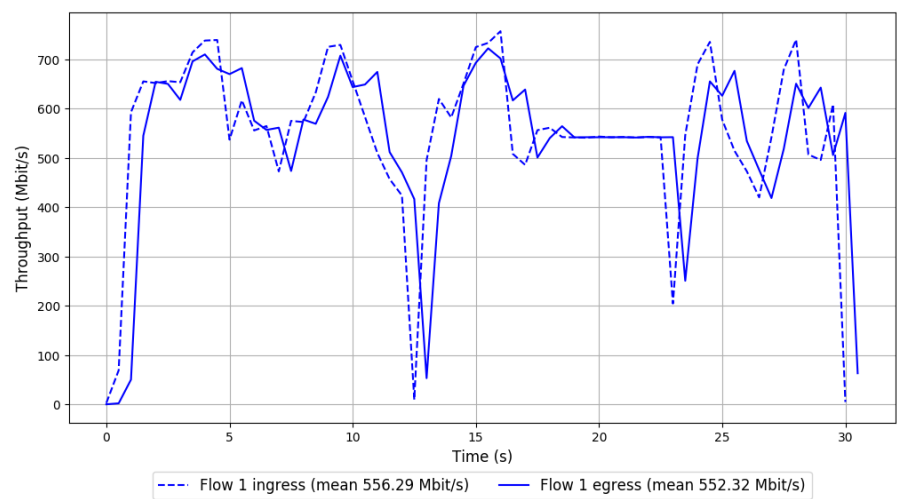


Run 2: Statistics of TCP BBR

Start at: 2018-09-05 06:02:32
End at: 2018-09-05 06:03:02
Local clock offset: -0.021 ms
Remote clock offset: -2.833 ms

Below is generated by plot.py at 2018-09-05 06:14:44
Datalink statistics
-- Total of 1 flow:
Average throughput: 552.32 Mbit/s
95th percentile per-packet one-way delay: 138.382 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 552.32 Mbit/s
95th percentile per-packet one-way delay: 138.382 ms
Loss rate: 0.71%

Run 2: Report of TCP BBR — Data Link

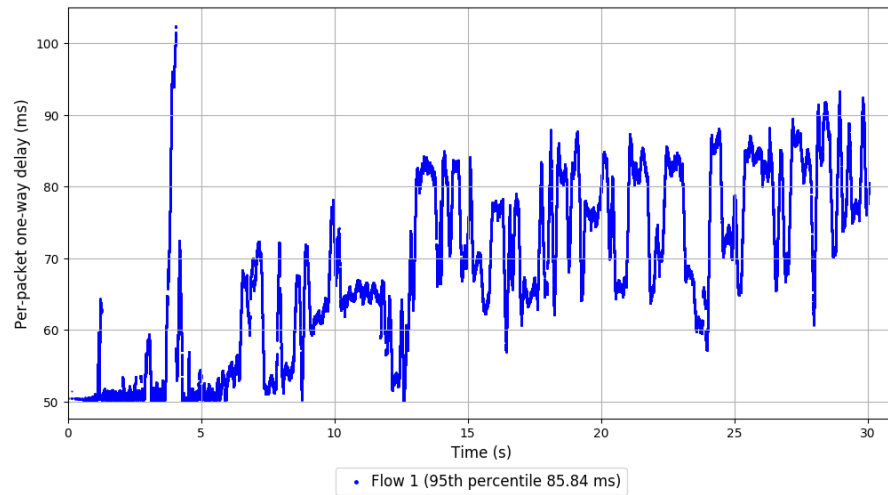
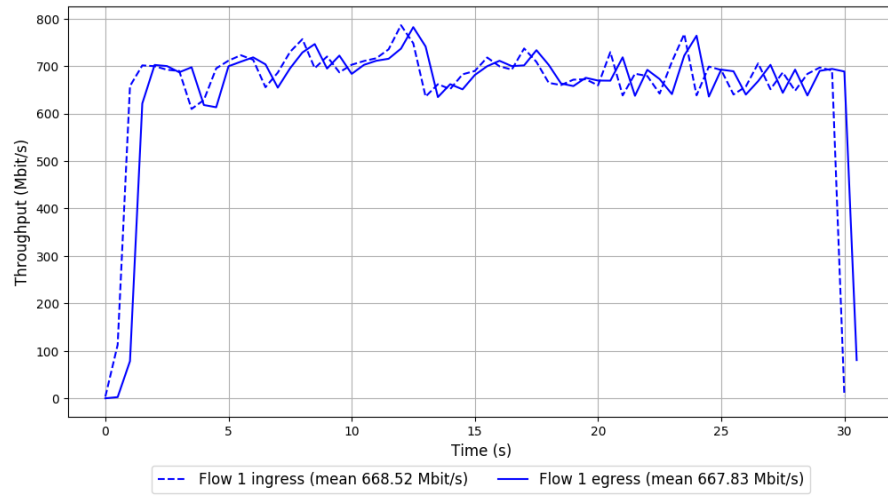


Run 1: Statistics of TCP Cubic

Start at: 2018-09-05 05:54:48
End at: 2018-09-05 05:55:18
Local clock offset: 0.236 ms
Remote clock offset: -0.088 ms

Below is generated by plot.py at 2018-09-05 06:14:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 667.83 Mbit/s
95th percentile per-packet one-way delay: 85.844 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 667.83 Mbit/s
95th percentile per-packet one-way delay: 85.844 ms
Loss rate: 0.09%

Run 1: Report of TCP Cubic — Data Link

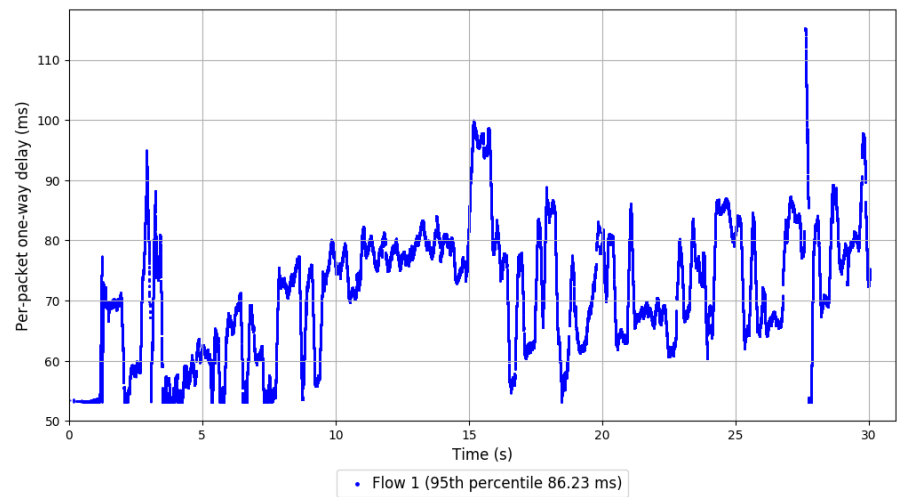
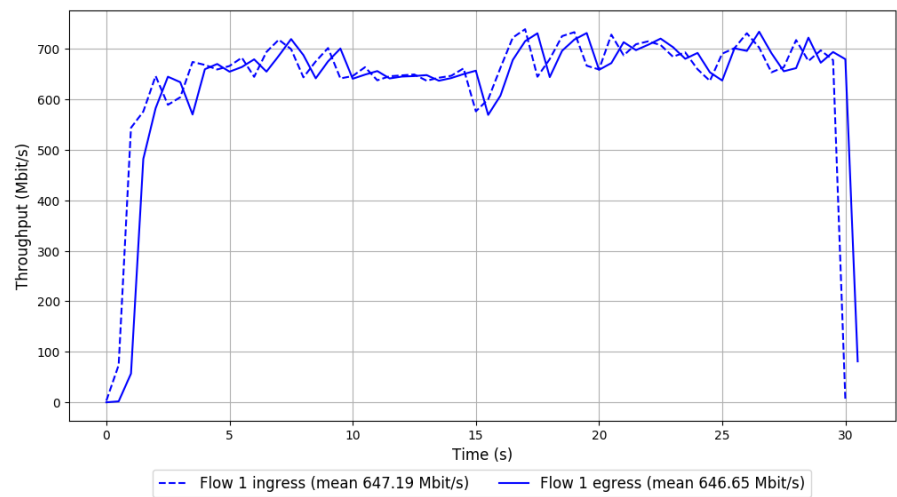


Run 2: Statistics of TCP Cubic

Start at: 2018-09-05 06:00:54
End at: 2018-09-05 06:01:24
Local clock offset: 0.246 ms
Remote clock offset: -0.078 ms

Below is generated by plot.py at 2018-09-05 06:14:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 646.65 Mbit/s
95th percentile per-packet one-way delay: 86.232 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 646.65 Mbit/s
95th percentile per-packet one-way delay: 86.232 ms
Loss rate: 0.08%

Run 2: Report of TCP Cubic — Data Link



Run 1: Statistics of Indigo

Start at: 2018-09-05 05:58:02

End at: 2018-09-05 05:58:32

Local clock offset: 0.109 ms

Remote clock offset: -0.159 ms

Below is generated by plot.py at 2018-09-05 06:14:53

Datalink statistics

-- Total of 1 flow:

Average throughput: 221.84 Mbit/s

95th percentile per-packet one-way delay: 53.606 ms

Loss rate: 0.00%

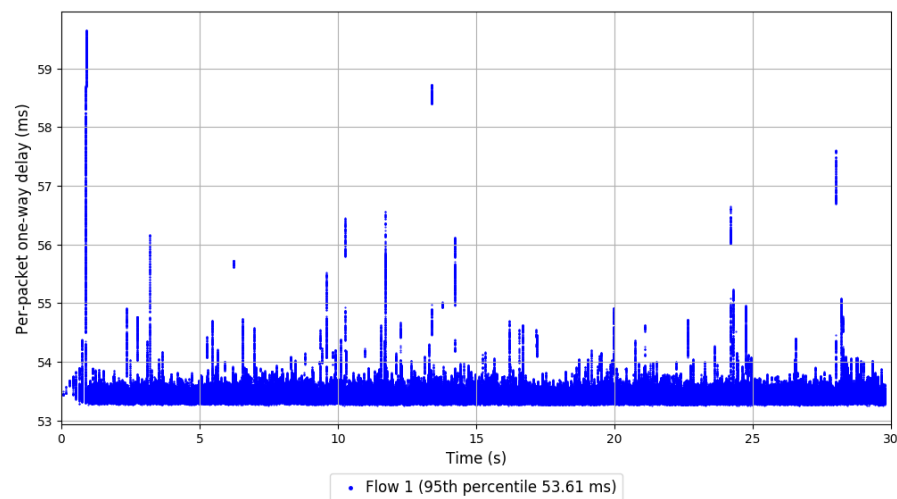
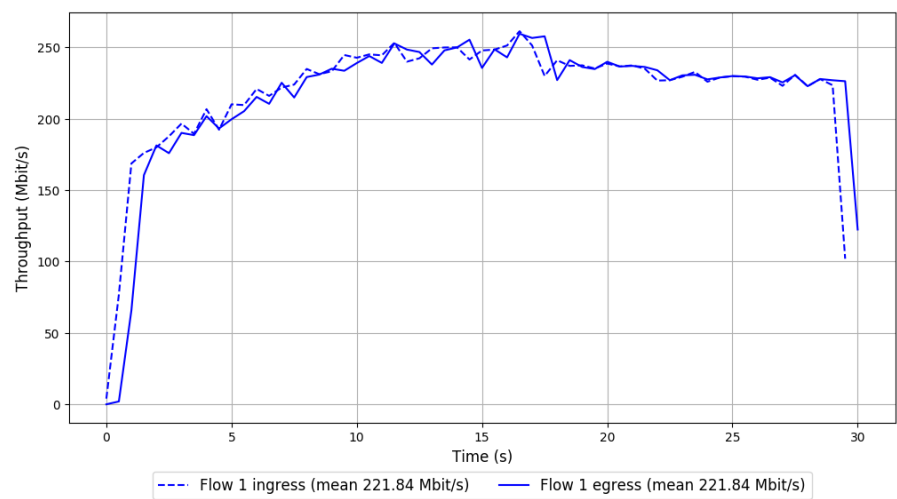
-- Flow 1:

Average throughput: 221.84 Mbit/s

95th percentile per-packet one-way delay: 53.606 ms

Loss rate: 0.00%

Run 1: Report of Indigo — Data Link

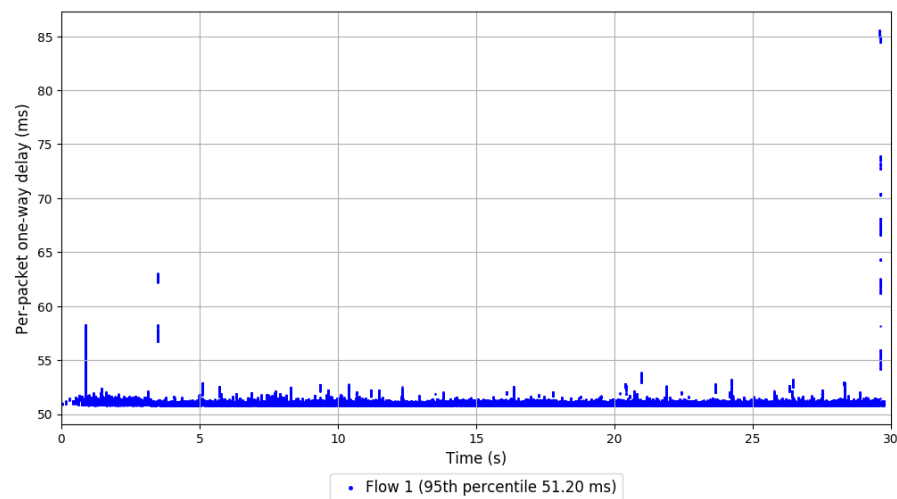
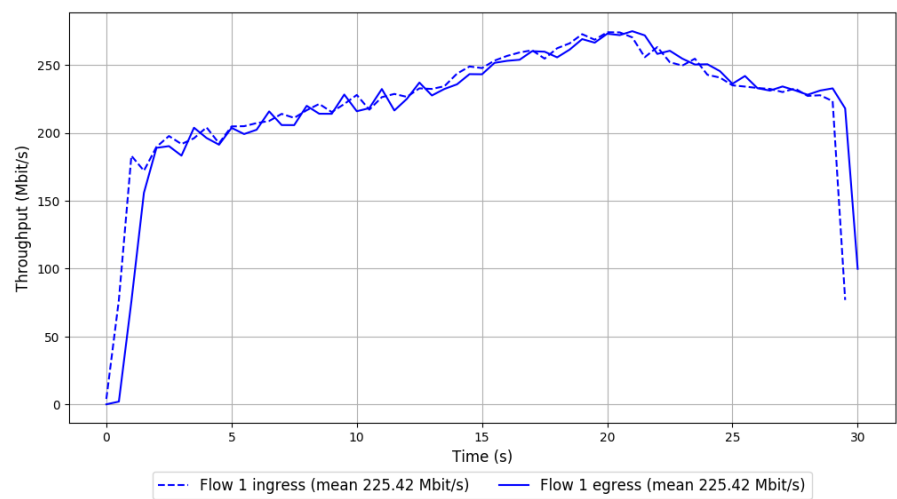


Run 2: Statistics of Indigo

Start at: 2018-09-05 06:04:08
End at: 2018-09-05 06:04:38
Local clock offset: -0.156 ms
Remote clock offset: -2.819 ms

Below is generated by plot.py at 2018-09-05 06:14:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 225.42 Mbit/s
95th percentile per-packet one-way delay: 51.200 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 225.42 Mbit/s
95th percentile per-packet one-way delay: 51.200 ms
Loss rate: 0.00%

Run 2: Report of Indigo — Data Link

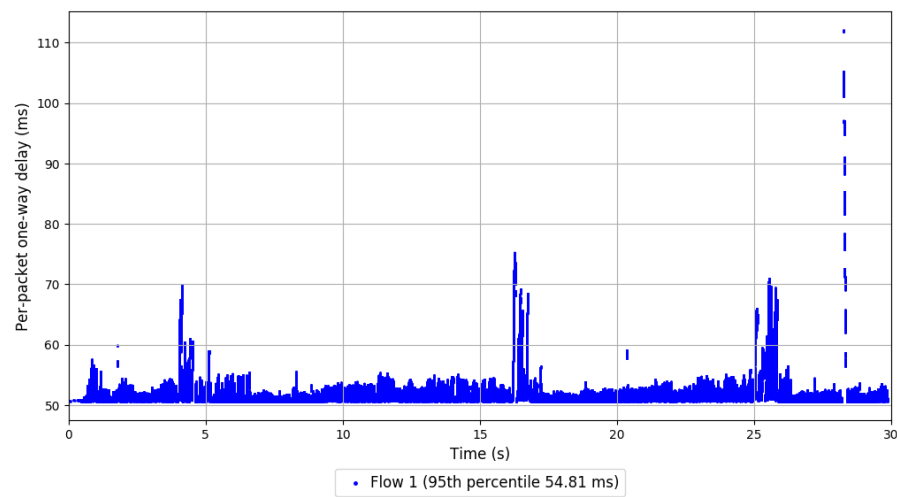
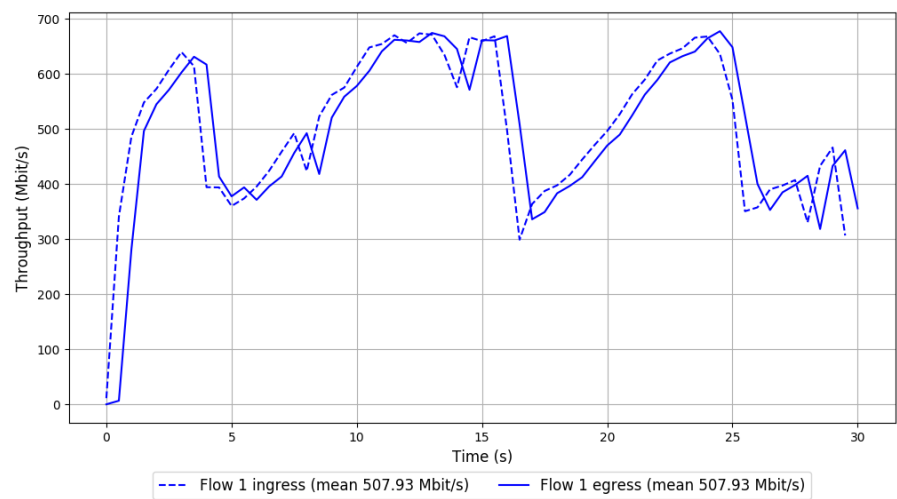


Run 1: Statistics of Muses-25

Start at: 2018-09-05 05:53:18
End at: 2018-09-05 05:53:48
Local clock offset: 0.44 ms
Remote clock offset: -2.854 ms

Below is generated by plot.py at 2018-09-05 06:14:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 507.93 Mbit/s
95th percentile per-packet one-way delay: 54.807 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 507.93 Mbit/s
95th percentile per-packet one-way delay: 54.807 ms
Loss rate: 0.00%

Run 1: Report of Muses-25 — Data Link



Run 2: Statistics of Muses-25

Start at: 2018-09-05 05:59:29

End at: 2018-09-05 05:59:59

Local clock offset: 0.216 ms

Remote clock offset: 0.006 ms

Below is generated by plot.py at 2018-09-05 06:14:53

Datalink statistics

-- Total of 1 flow:

Average throughput: 401.62 Mbit/s

95th percentile per-packet one-way delay: 63.376 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 401.62 Mbit/s

95th percentile per-packet one-way delay: 63.376 ms

Loss rate: 0.00%

Run 2: Report of Muses-25 — Data Link

