

Pantheon Report

Generated at 2018-09-05 23:19:50 (UTC).

Data path: GCE Iowa 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.

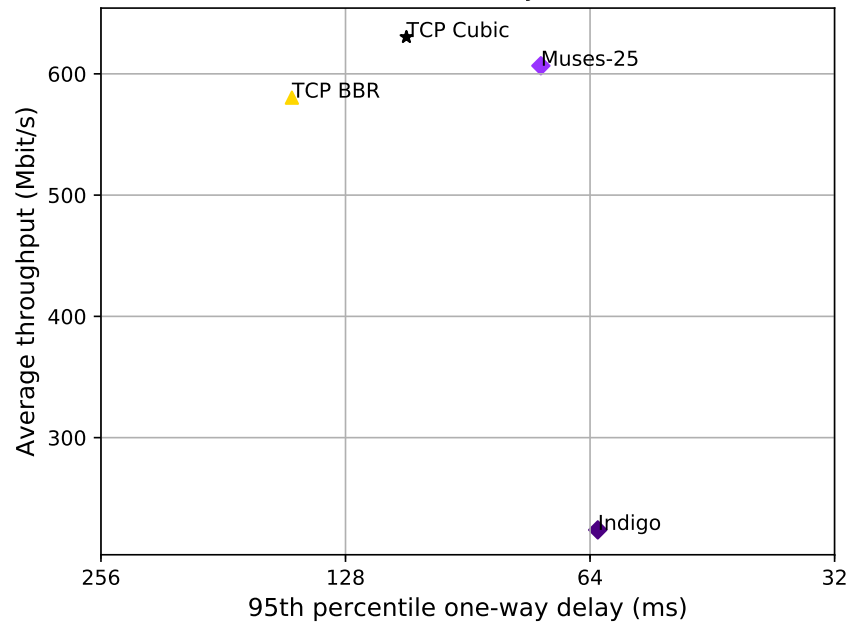
System info:

```
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
```

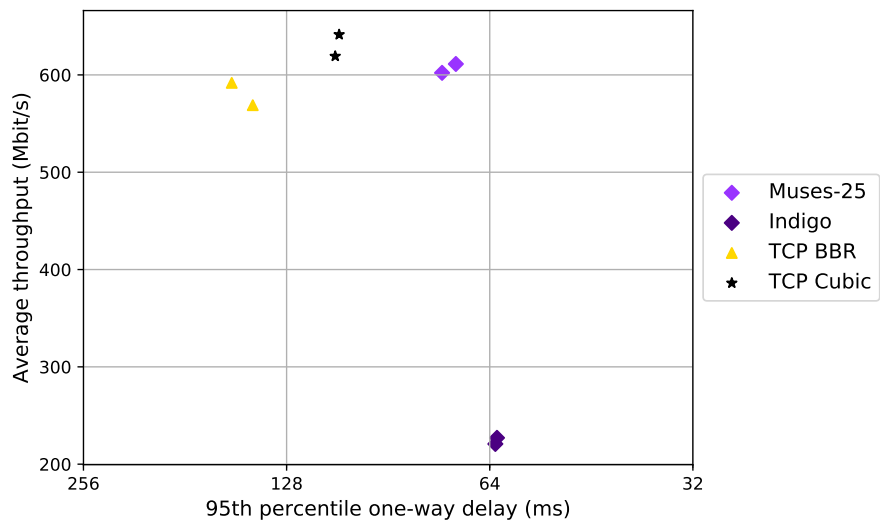
Git summary:

```
branch: muses @ 18b9165265c8ba2915c862e8713fd9ad82c1ac21
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf5e58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ a28d20fb82a95a965a3da65fd1eb71b8994e9b84
third_party/pantheon-tunnel @ cbfce6db5ff5740d4fe1771f813cd646339e1952
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 Iowa to GCE Tokyo, 2 runs of 30s each per scheme
(mean of all runs by scheme)



test from GCE Iowa 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	580.37	149.01	1.04
TCP Cubic	2	630.33	107.70	0.10
Indigo	2	223.91	62.61	0.00
Muses-25	2	606.67	73.58	0.00

Run 1: Statistics of TCP BBR

Start at: 2018-09-05 22:57:44

End at: 2018-09-05 22:58:14

Local clock offset: 1.013 ms

Remote clock offset: 6.709 ms

Below is generated by plot.py at 2018-09-05 23:19:39

Datalink statistics

-- Total of 1 flow:

Average throughput: 591.84 Mbit/s

95th percentile per-packet one-way delay: 154.347 ms

Loss rate: 1.57%

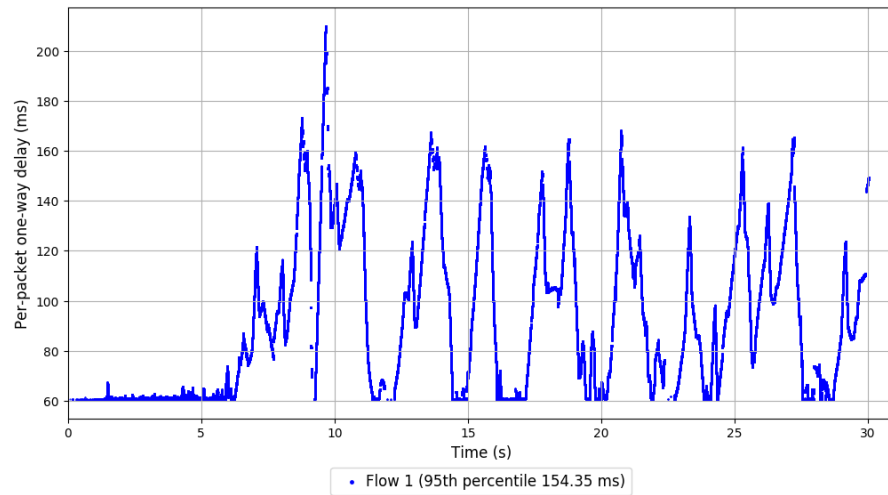
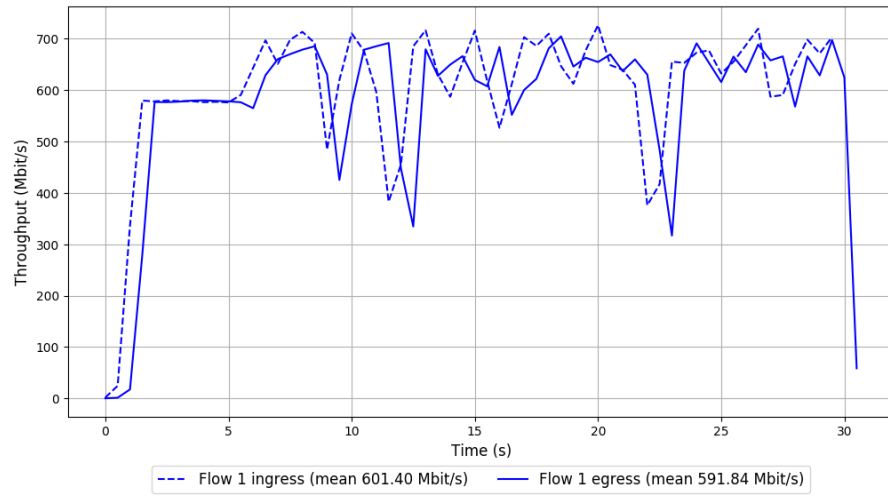
-- Flow 1:

Average throughput: 591.84 Mbit/s

95th percentile per-packet one-way delay: 154.347 ms

Loss rate: 1.57%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-09-05 23:04:04

End at: 2018-09-05 23:04:34

Local clock offset: 0.931 ms

Remote clock offset: 7.182 ms

Below is generated by plot.py at 2018-09-05 23:19:39

Datalink statistics

-- Total of 1 flow:

Average throughput: 568.90 Mbit/s

95th percentile per-packet one-way delay: 143.665 ms

Loss rate: 0.52%

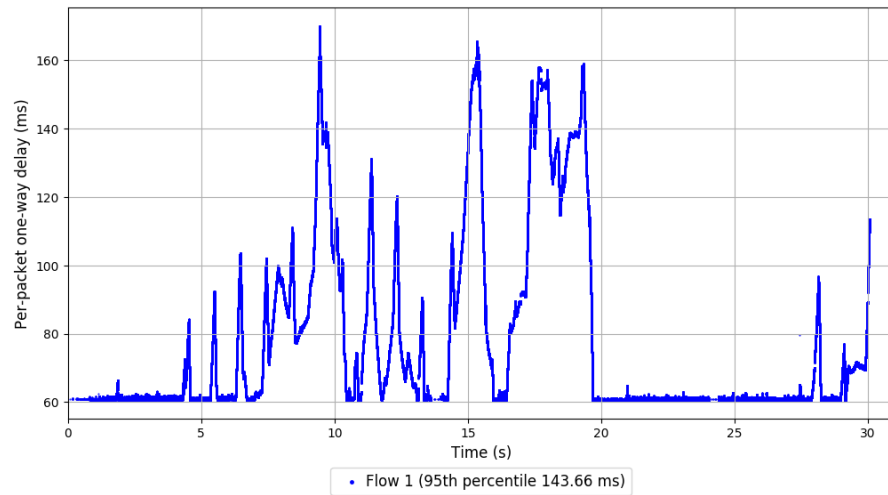
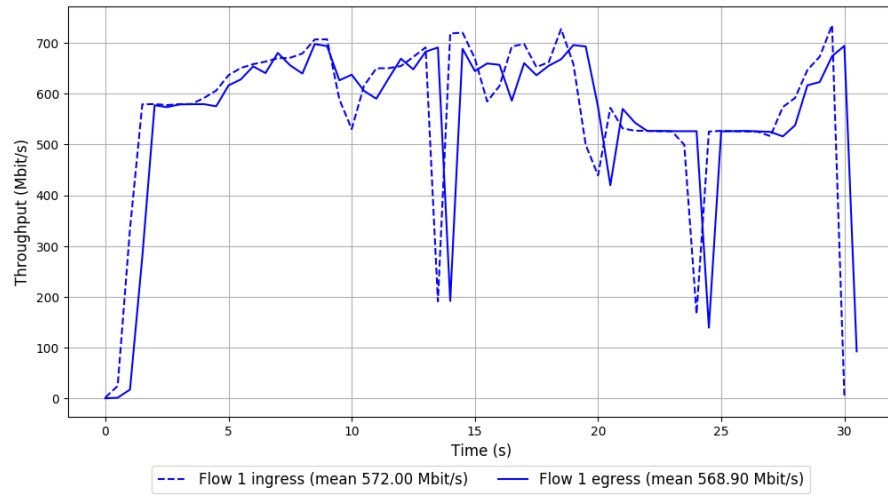
-- Flow 1:

Average throughput: 568.90 Mbit/s

95th percentile per-packet one-way delay: 143.665 ms

Loss rate: 0.52%

Run 2: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-09-05 22:59:24

End at: 2018-09-05 22:59:54

Local clock offset: 1.048 ms

Remote clock offset: 7.967 ms

Below is generated by plot.py at 2018-09-05 23:19:49

Datalink statistics

-- Total of 1 flow:

Average throughput: 641.42 Mbit/s

95th percentile per-packet one-way delay: 106.984 ms

Loss rate: 0.04%

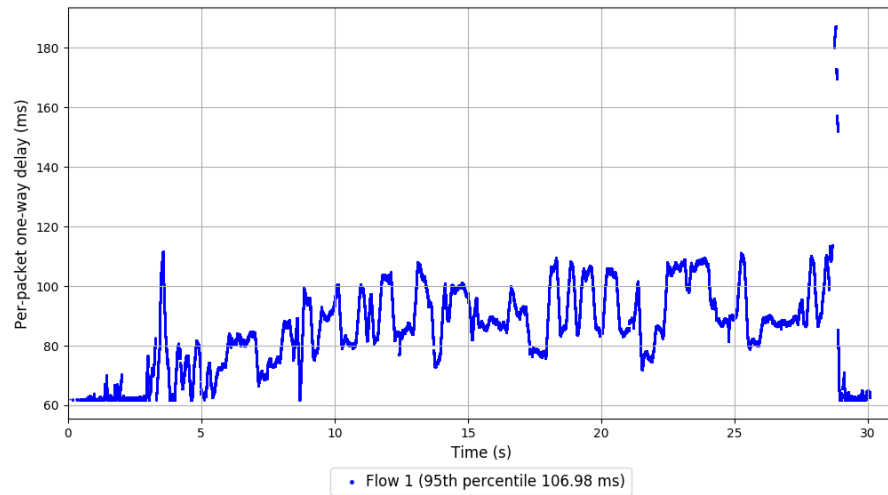
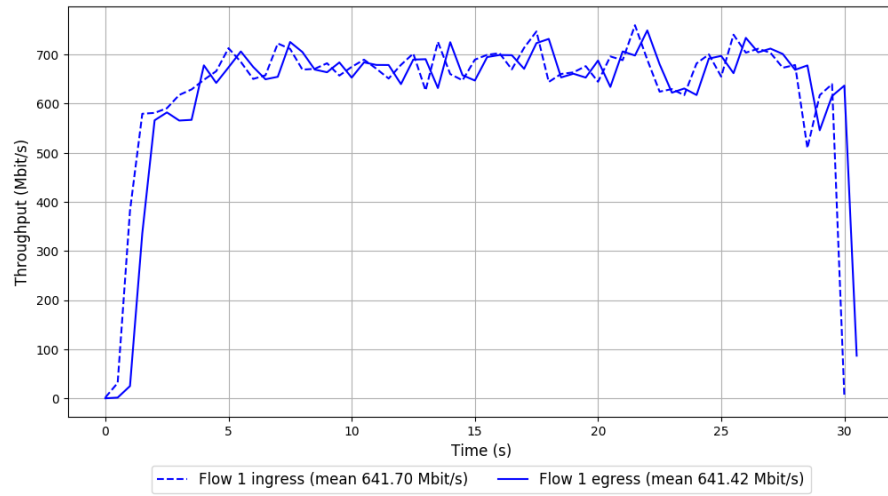
-- Flow 1:

Average throughput: 641.42 Mbit/s

95th percentile per-packet one-way delay: 106.984 ms

Loss rate: 0.04%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-09-05 23:05:40

End at: 2018-09-05 23:06:10

Local clock offset: 0.733 ms

Remote clock offset: 7.559 ms

Below is generated by plot.py at 2018-09-05 23:19:49

Datalink statistics

-- Total of 1 flow:

Average throughput: 619.23 Mbit/s

95th percentile per-packet one-way delay: 108.423 ms

Loss rate: 0.16%

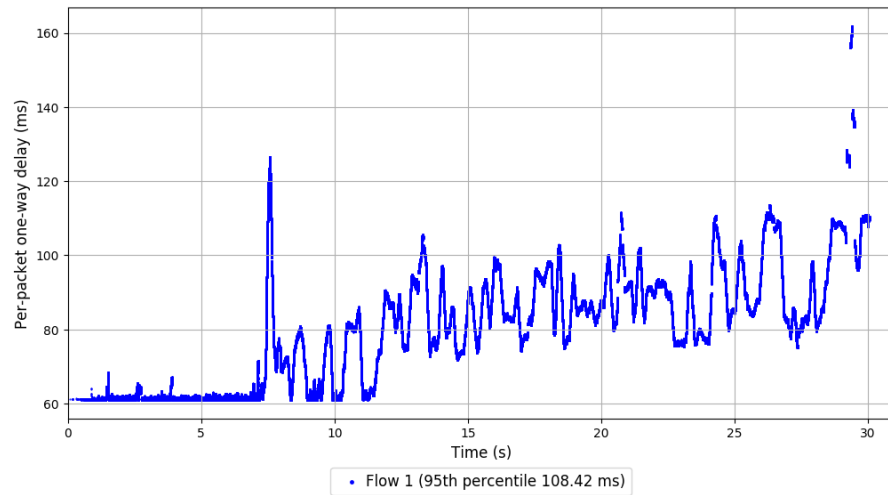
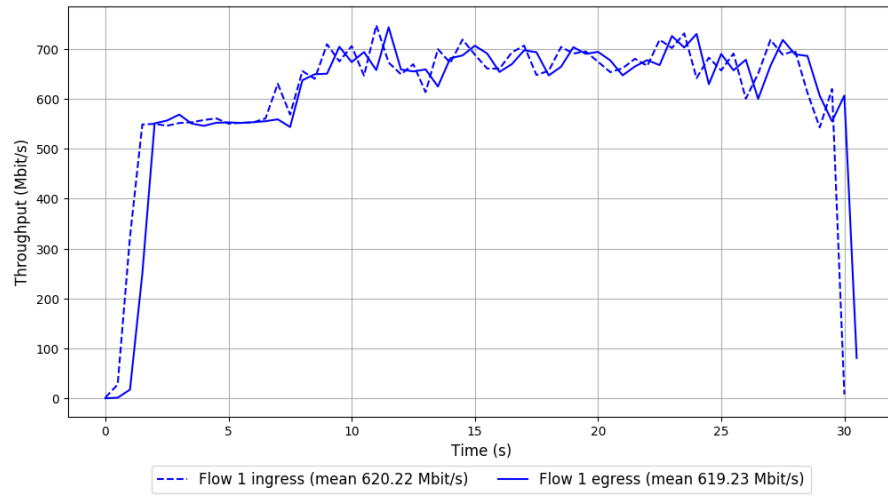
-- Flow 1:

Average throughput: 619.23 Mbit/s

95th percentile per-packet one-way delay: 108.423 ms

Loss rate: 0.16%

Run 2: Report of TCP Cubic — Data Link



Run 1: Statistics of Indigo

Start at: 2018-09-05 23:02:37

End at: 2018-09-05 23:03:07

Local clock offset: 1.074 ms

Remote clock offset: 8.403 ms

Below is generated by plot.py at 2018-09-05 23:19:49

Datalink statistics

-- Total of 1 flow:

Average throughput: 227.04 Mbit/s

95th percentile per-packet one-way delay: 62.438 ms

Loss rate: 0.00%

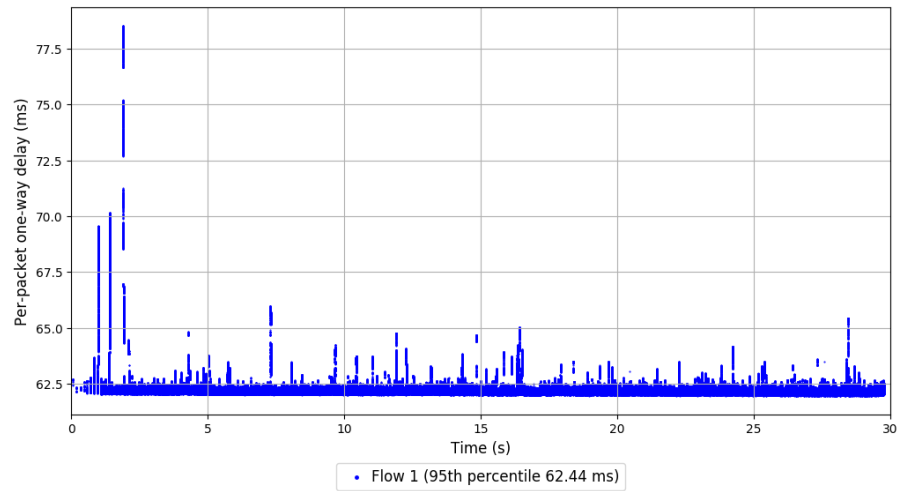
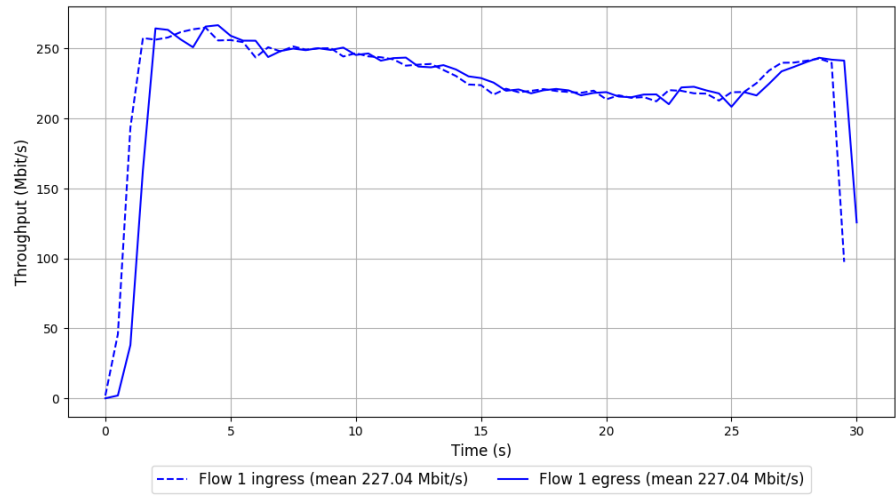
-- Flow 1:

Average throughput: 227.04 Mbit/s

95th percentile per-packet one-way delay: 62.438 ms

Loss rate: 0.00%

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-09-05 23:08:52

End at: 2018-09-05 23:09:22

Local clock offset: 0.581 ms

Remote clock offset: 8.585 ms

Below is generated by plot.py at 2018-09-05 23:19:49

Datalink statistics

-- Total of 1 flow:

Average throughput: 220.79 Mbit/s

95th percentile per-packet one-way delay: 62.788 ms

Loss rate: 0.00%

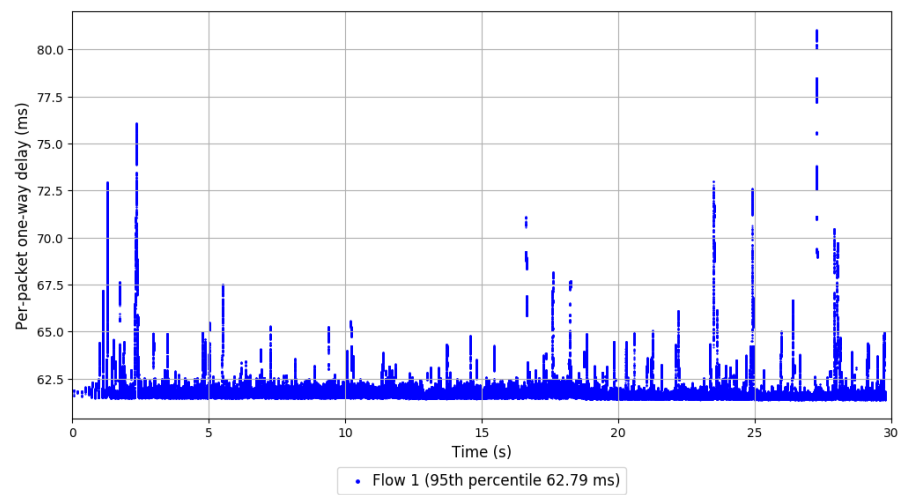
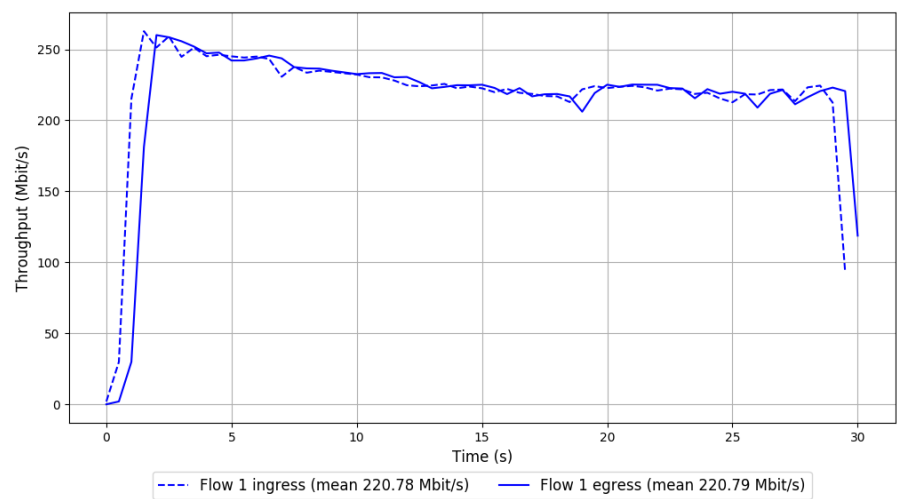
-- Flow 1:

Average throughput: 220.79 Mbit/s

95th percentile per-packet one-way delay: 62.788 ms

Loss rate: 0.00%

Run 2: Report of Indigo — Data Link



Run 1: Statistics of Muses-25

Start at: 2018-09-05 23:01:02

End at: 2018-09-05 23:01:32

Local clock offset: 1.052 ms

Remote clock offset: 7.022 ms

Below is generated by plot.py at 2018-09-05 23:19:49

Datalink statistics

-- Total of 1 flow:

Average throughput: 602.12 Mbit/s

95th percentile per-packet one-way delay: 75.306 ms

Loss rate: 0.00%

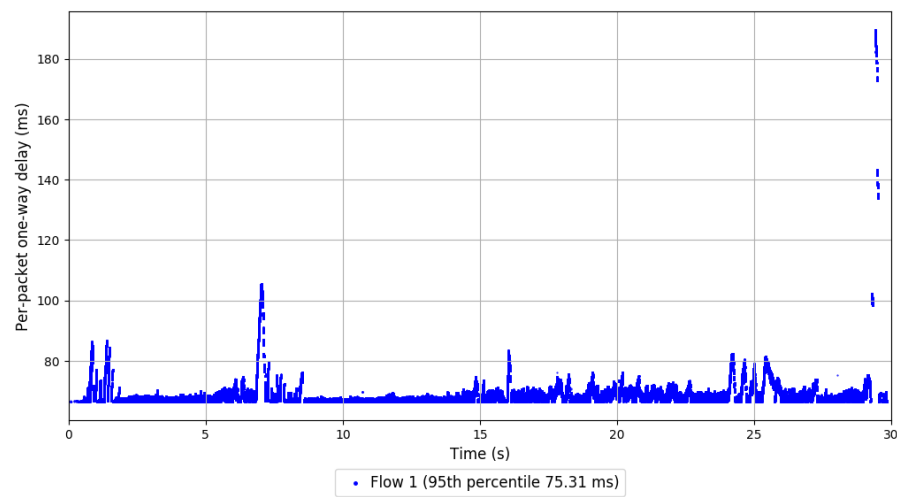
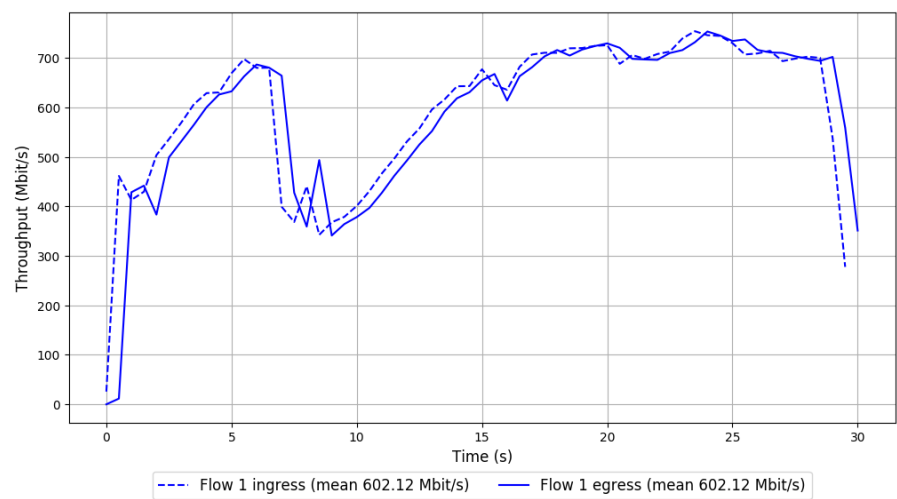
-- Flow 1:

Average throughput: 602.12 Mbit/s

95th percentile per-packet one-way delay: 75.306 ms

Loss rate: 0.00%

Run 1: Report of Muses-25 — Data Link



Run 2: Statistics of Muses-25

Start at: 2018-09-05 23:07:17

End at: 2018-09-05 23:07:47

Local clock offset: 0.674 ms

Remote clock offset: 8.29 ms

Below is generated by plot.py at 2018-09-05 23:19:49

Datalink statistics

-- Total of 1 flow:

Average throughput: 611.23 Mbit/s

95th percentile per-packet one-way delay: 71.847 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 611.23 Mbit/s

95th percentile per-packet one-way delay: 71.847 ms

Loss rate: 0.00%

Run 2: Report of Muses-25 — Data Link

