

Pantheon Report

Generated at 2018-09-06 02:15:45 (UTC).

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

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.

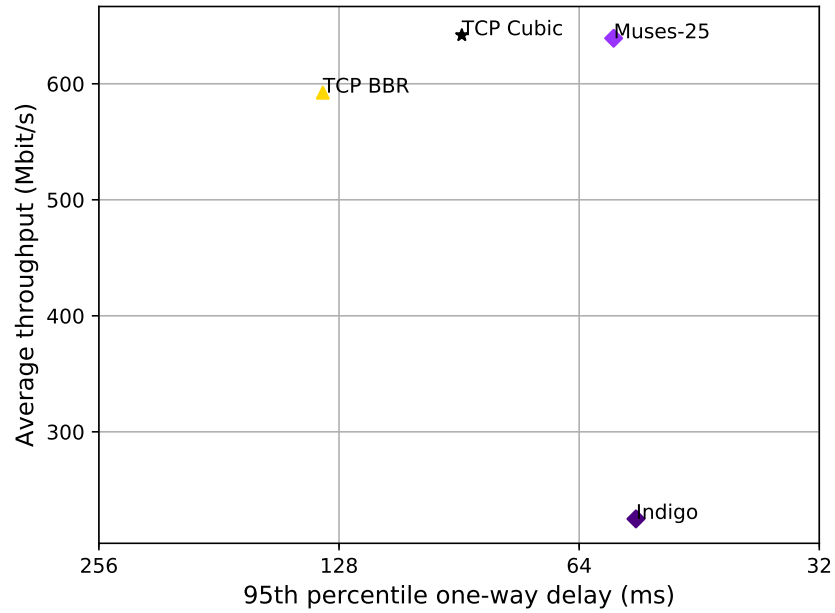
System info:

```
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
```

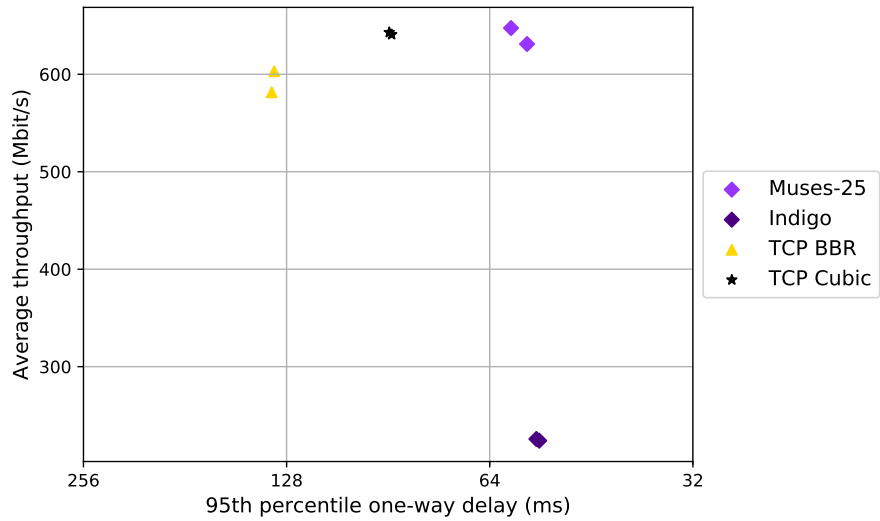
Git summary:

```
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 Tokyo to GCE Sydney, 2 runs of 30s each per scheme
(mean of all runs by scheme)



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



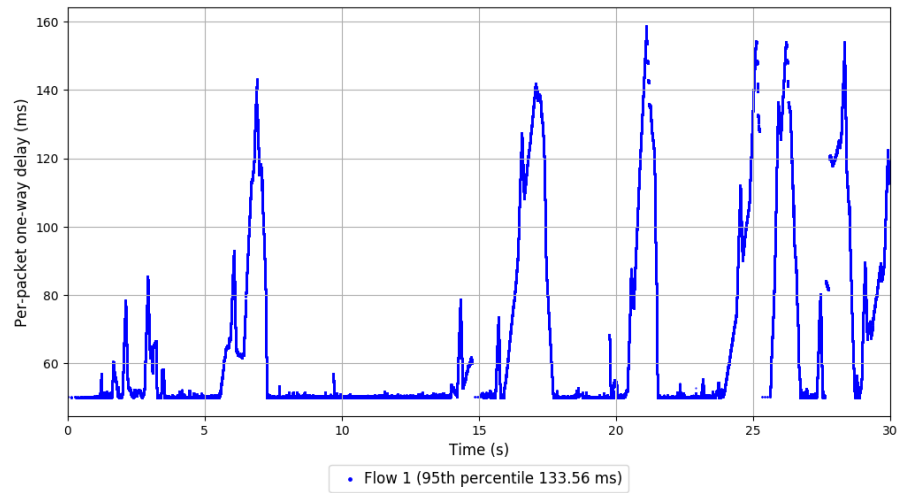
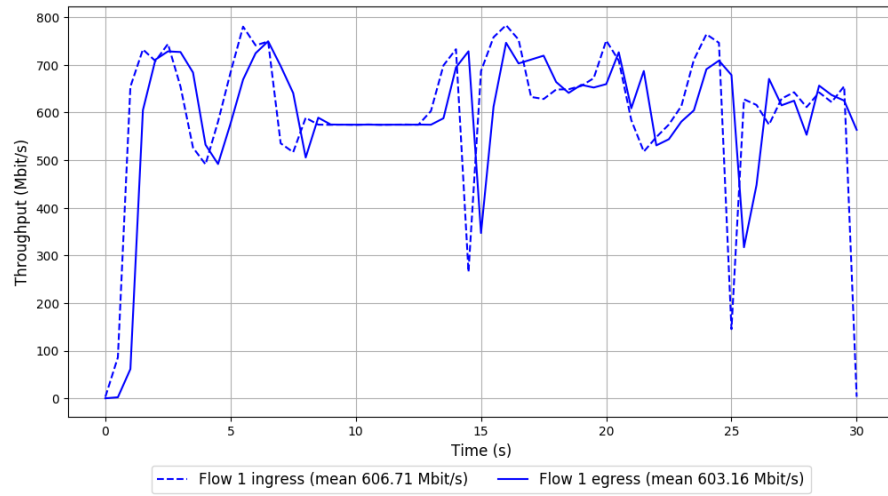
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	2	592.36	134.12	0.84
TCP Cubic	2	641.88	89.80	0.42
Indigo	2	224.94	54.32	0.36
Muses-25	2	639.23	57.93	0.33

Run 1: Statistics of TCP BBR

Start at: 2018-09-06 01:52:41
End at: 2018-09-06 01:53:11
Local clock offset: 0.392 ms
Remote clock offset: -0.326 ms

Below is generated by plot.py at 2018-09-06 02:15:30
Datalink statistics
-- Total of 1 flow:
Average throughput: 603.16 Mbit/s
95th percentile per-packet one-way delay: 133.560 ms
Loss rate: 0.93%
-- Flow 1:
Average throughput: 603.16 Mbit/s
95th percentile per-packet one-way delay: 133.560 ms
Loss rate: 0.93%

Run 1: Report of TCP BBR — Data Link

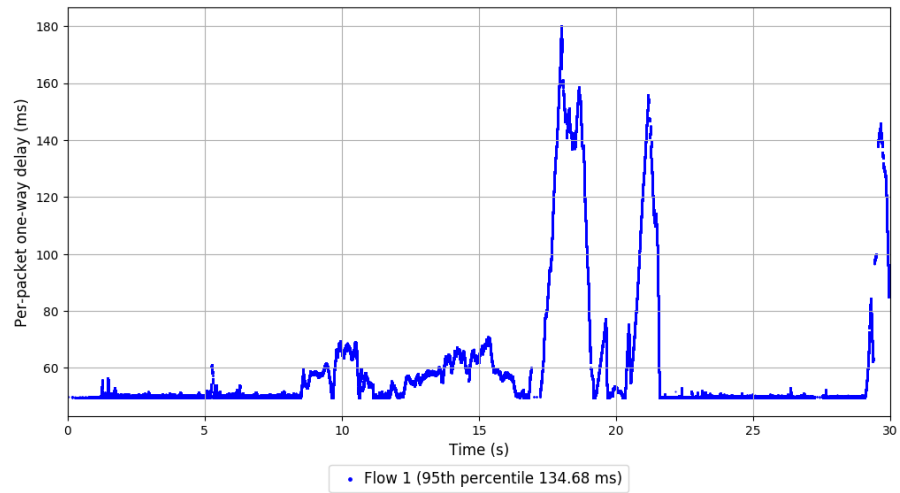
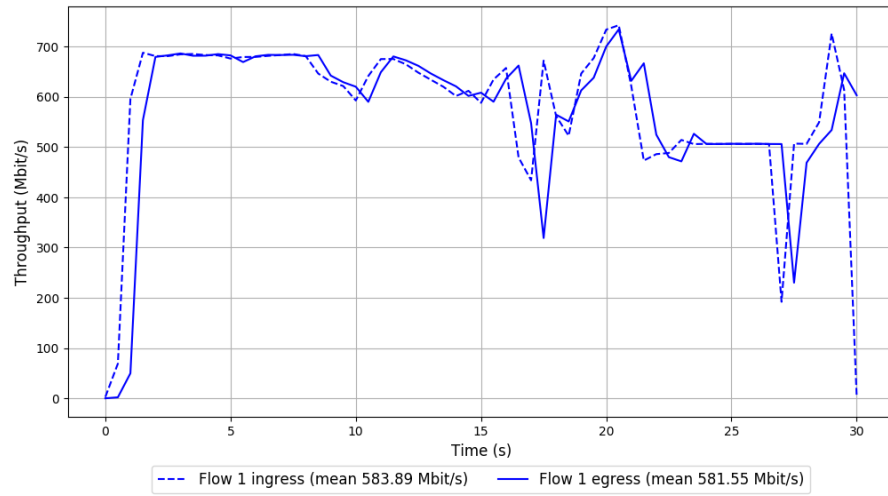


Run 2: Statistics of TCP BBR

Start at: 2018-09-06 01:58:59
End at: 2018-09-06 01:59:29
Local clock offset: 0.299 ms
Remote clock offset: -0.056 ms

Below is generated by plot.py at 2018-09-06 02:15:30
Datalink statistics
-- Total of 1 flow:
Average throughput: 581.55 Mbit/s
95th percentile per-packet one-way delay: 134.678 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 581.55 Mbit/s
95th percentile per-packet one-way delay: 134.678 ms
Loss rate: 0.75%

Run 2: Report of TCP BBR — Data Link

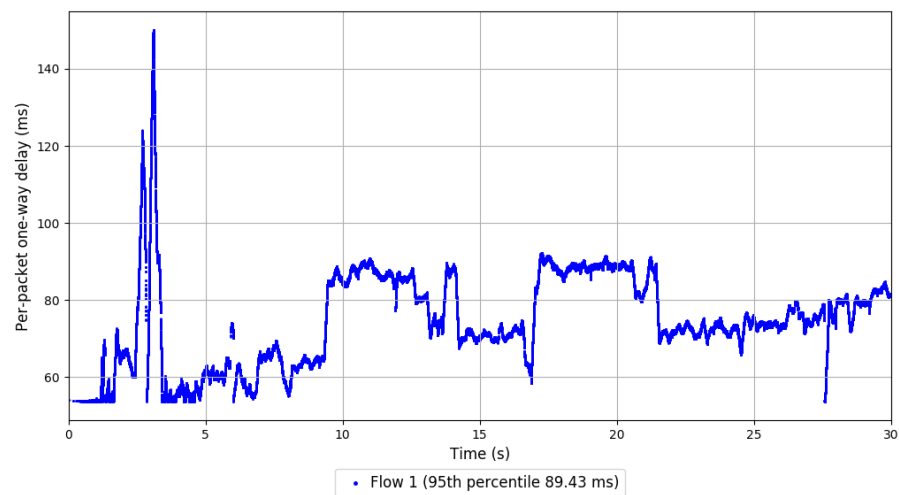
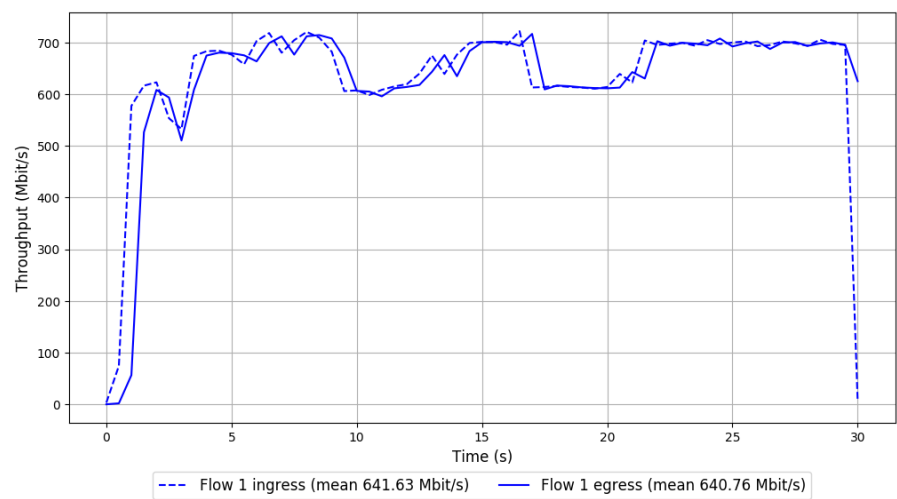


Run 1: Statistics of TCP Cubic

Start at: 2018-09-06 01:55:45
End at: 2018-09-06 01:56:15
Local clock offset: 0.504 ms
Remote clock offset: -0.175 ms

Below is generated by plot.py at 2018-09-06 02:15:40
Datalink statistics
-- Total of 1 flow:
Average throughput: 640.76 Mbit/s
95th percentile per-packet one-way delay: 89.430 ms
Loss rate: 0.49%
-- Flow 1:
Average throughput: 640.76 Mbit/s
95th percentile per-packet one-way delay: 89.430 ms
Loss rate: 0.49%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-09-06 02:02:01

End at: 2018-09-06 02:02:31

Local clock offset: 0.566 ms

Remote clock offset: 0.038 ms

Below is generated by plot.py at 2018-09-06 02:15:44

Datalink statistics

-- Total of 1 flow:

Average throughput: 643.01 Mbit/s

95th percentile per-packet one-way delay: 90.176 ms

Loss rate: 0.35%

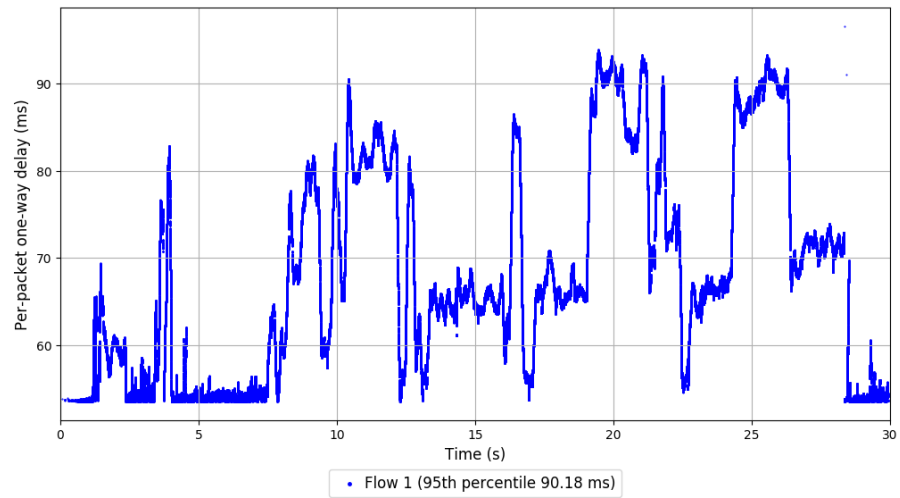
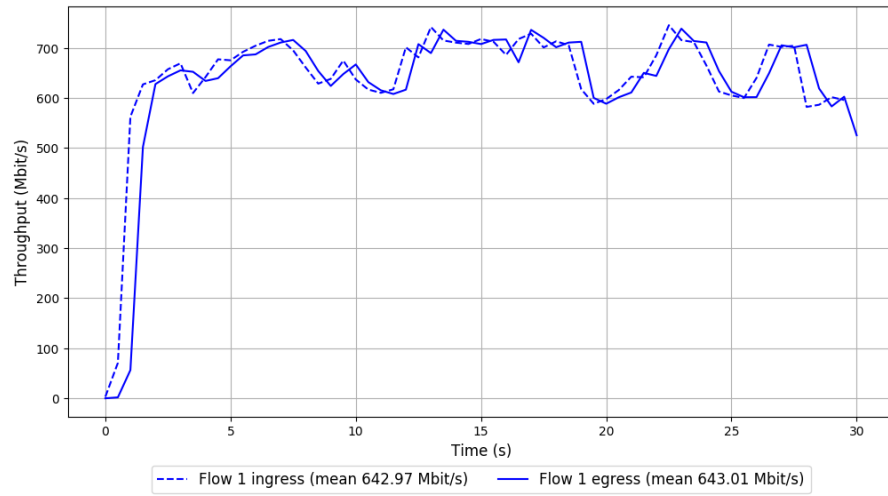
-- Flow 1:

Average throughput: 643.01 Mbit/s

95th percentile per-packet one-way delay: 90.176 ms

Loss rate: 0.35%

Run 2: Report of TCP Cubic — Data Link

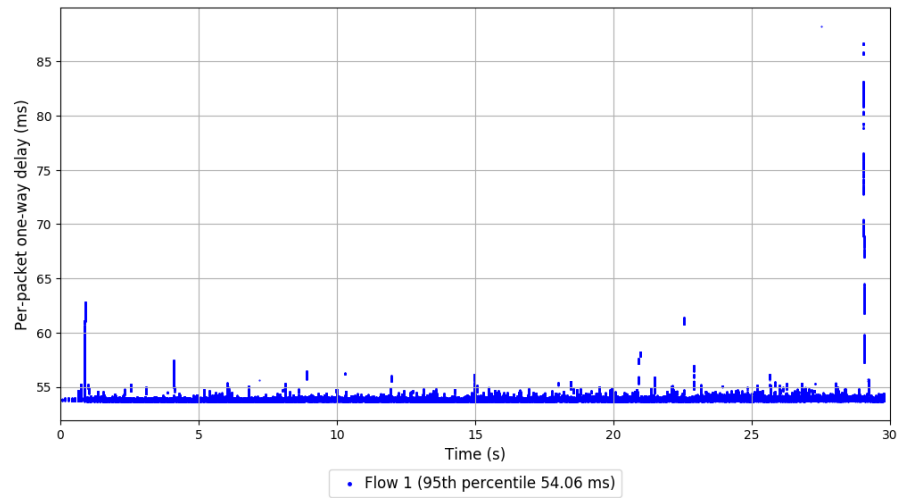
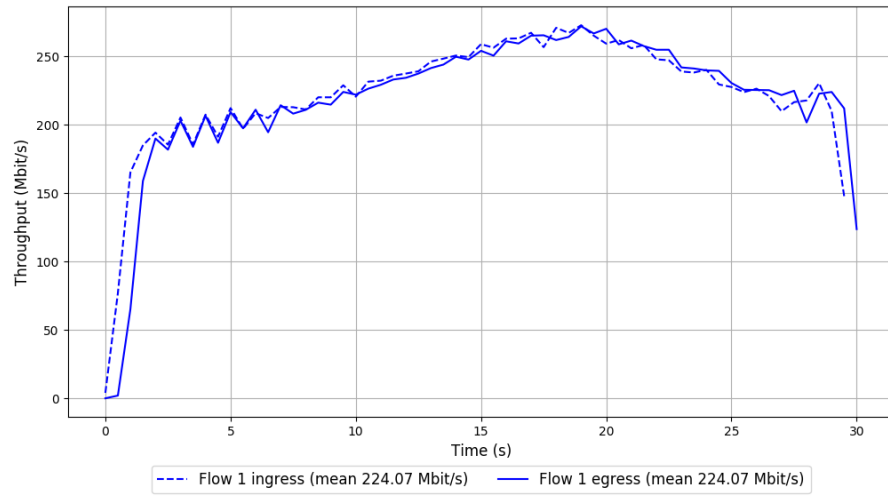


Run 1: Statistics of Indigo

Start at: 2018-09-06 01:54:18
End at: 2018-09-06 01:54:48
Local clock offset: 0.591 ms
Remote clock offset: -0.116 ms

Below is generated by plot.py at 2018-09-06 02:15:44
Datalink statistics
-- Total of 1 flow:
Average throughput: 224.07 Mbit/s
95th percentile per-packet one-way delay: 54.060 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 224.07 Mbit/s
95th percentile per-packet one-way delay: 54.060 ms
Loss rate: 0.36%

Run 1: Report of Indigo — Data Link

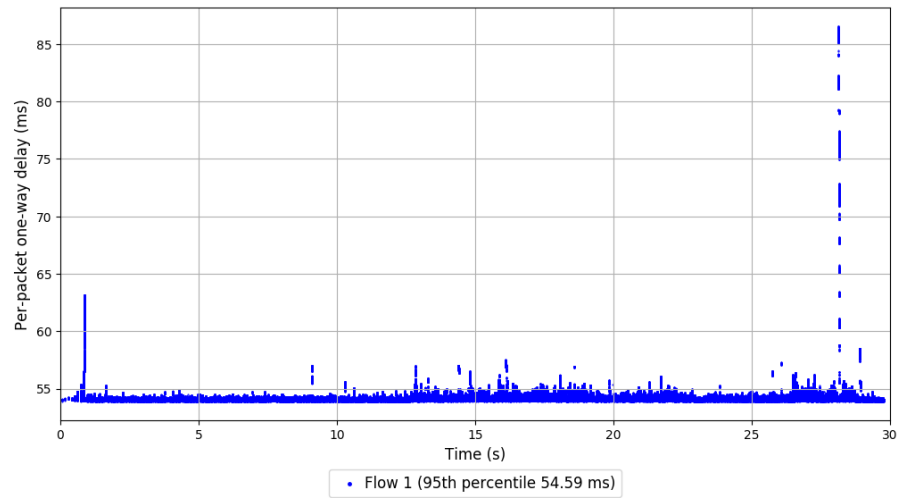
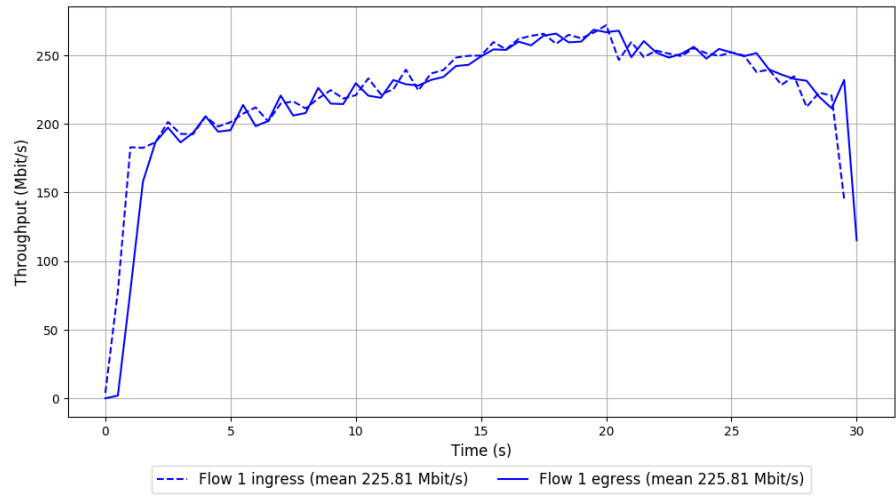


Run 2: Statistics of Indigo

Start at: 2018-09-06 02:00:34
End at: 2018-09-06 02:01:04
Local clock offset: 0.27 ms
Remote clock offset: -0.719 ms

Below is generated by plot.py at 2018-09-06 02:15:44
Datalink statistics
-- Total of 1 flow:
Average throughput: 225.81 Mbit/s
95th percentile per-packet one-way delay: 54.586 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 225.81 Mbit/s
95th percentile per-packet one-way delay: 54.586 ms
Loss rate: 0.36%

Run 2: Report of Indigo — Data Link



Run 1: Statistics of Muses-25

Start at: 2018-09-06 01:57:22

End at: 2018-09-06 01:57:52

Local clock offset: 0.366 ms

Remote clock offset: 1.044 ms

Below is generated by plot.py at 2018-09-06 02:15:44

Datalink statistics

-- Total of 1 flow:

Average throughput: 647.43 Mbit/s

95th percentile per-packet one-way delay: 59.519 ms

Loss rate: 0.25%

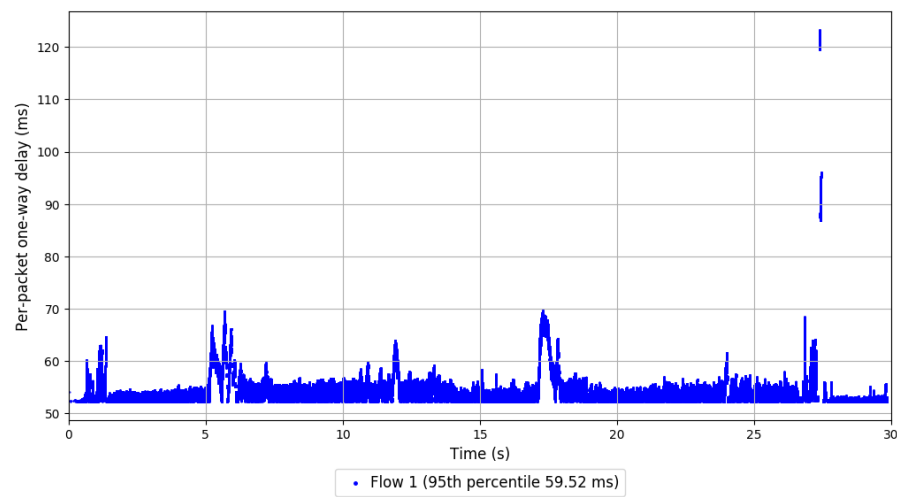
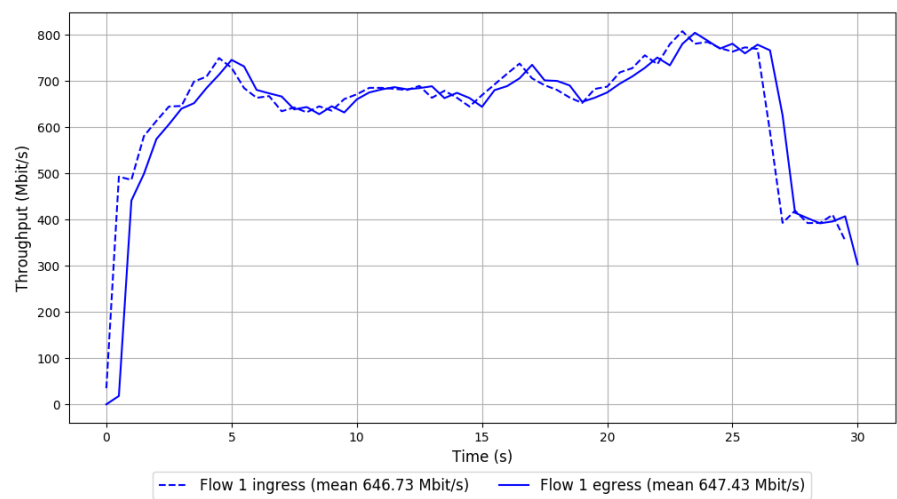
-- Flow 1:

Average throughput: 647.43 Mbit/s

95th percentile per-packet one-way delay: 59.519 ms

Loss rate: 0.25%

Run 1: Report of Muses-25 — Data Link



Run 2: Statistics of Muses-25

Start at: 2018-09-06 02:03:37
End at: 2018-09-06 02:04:07
Local clock offset: 0.371 ms
Remote clock offset: -0.204 ms

Below is generated by plot.py at 2018-09-06 02:15:44
Datalink statistics
-- Total of 1 flow:
Average throughput: 631.03 Mbit/s
95th percentile per-packet one-way delay: 56.350 ms
Loss rate: 0.40%
-- Flow 1:
Average throughput: 631.03 Mbit/s
95th percentile per-packet one-way delay: 56.350 ms
Loss rate: 0.40%

Run 2: Report of Muses-25 — Data Link

