

Pantheon Report

Generated at 2018-09-05 07:12:10 (UTC).

Data path: GCE Iowa on `ens4` (*remote*) → GCE London 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.

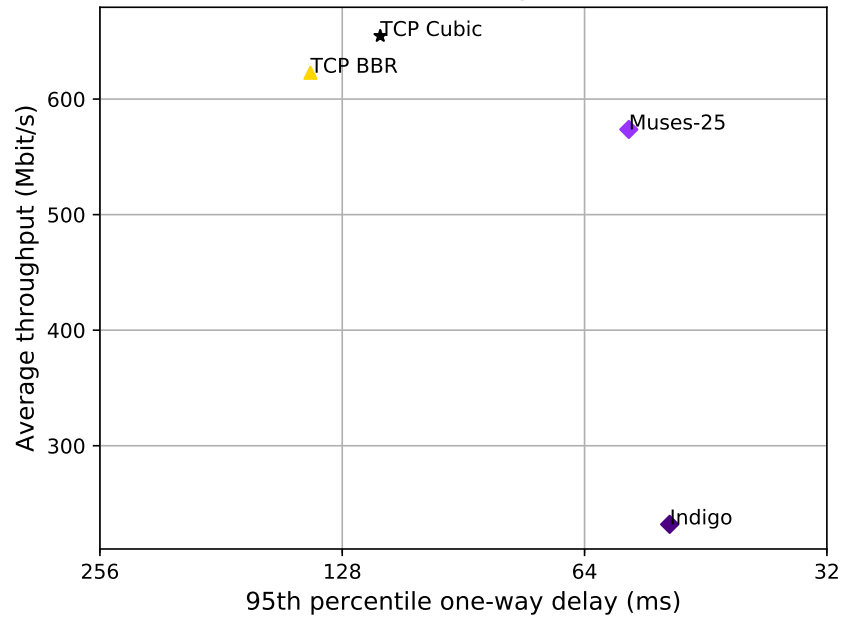
System info:

```
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
```

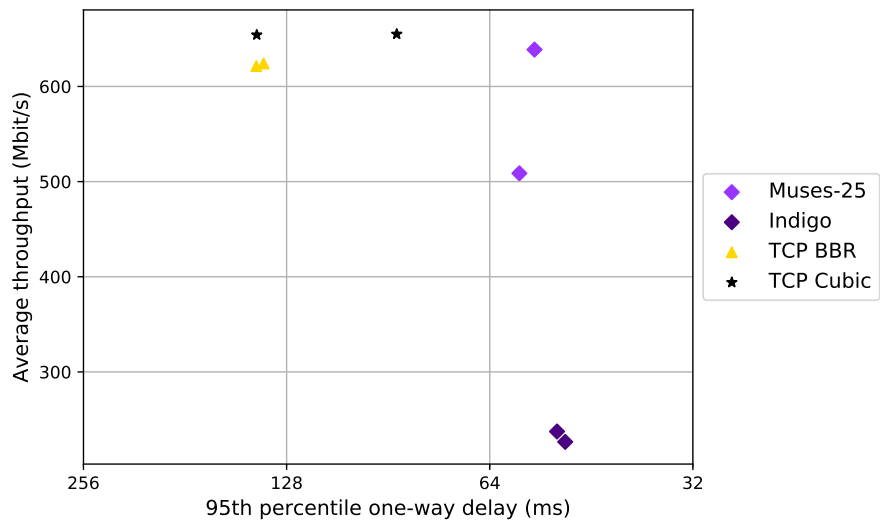
Git summary:

```
branch: muses @ 71e71e9a55b945431a7dea72180c1c9381097db9
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
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 Iowa to GCE London, 2 runs of 30s each per scheme
(mean of all runs by scheme)



test from GCE Iowa to GCE London, 2 runs of 30s each per scheme



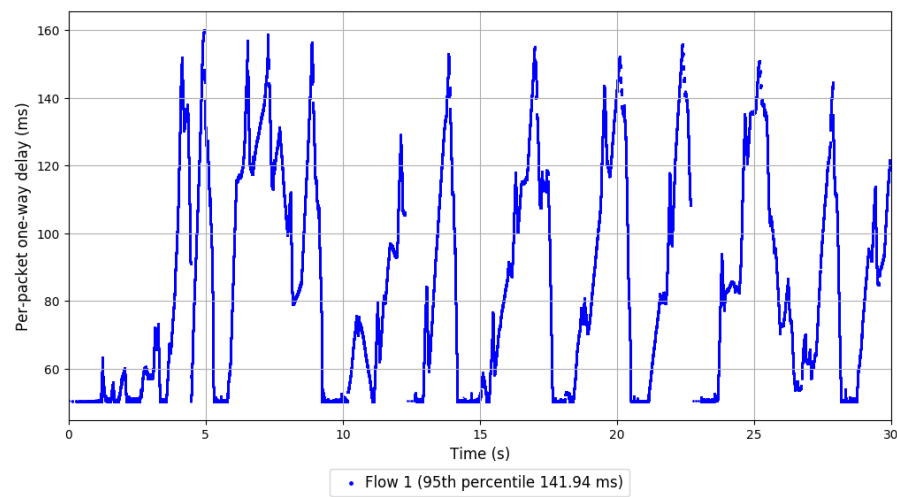
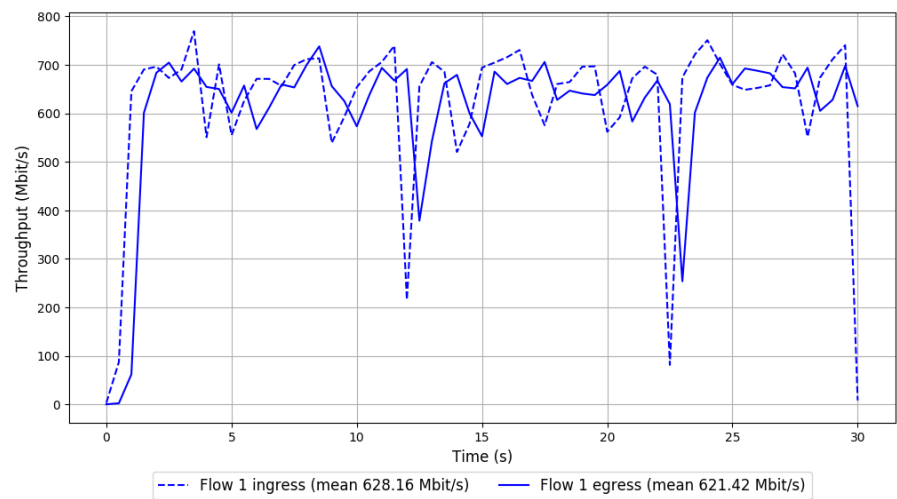
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	2	622.79	140.19	1.35
TCP Cubic	2	654.62	114.82	0.51
Indigo	2	231.95	50.17	0.33
Muses-25	2	573.73	56.39	0.35

Run 1: Statistics of TCP BBR

Start at: 2018-09-05 06:54:29
End at: 2018-09-05 06:54:59
Local clock offset: -0.412 ms
Remote clock offset: -0.104 ms

Below is generated by plot.py at 2018-09-05 07:11:59
Datalink statistics
-- Total of 1 flow:
Average throughput: 621.42 Mbit/s
95th percentile per-packet one-way delay: 141.942 ms
Loss rate: 1.41%
-- Flow 1:
Average throughput: 621.42 Mbit/s
95th percentile per-packet one-way delay: 141.942 ms
Loss rate: 1.41%

Run 1: Report of TCP BBR — Data Link

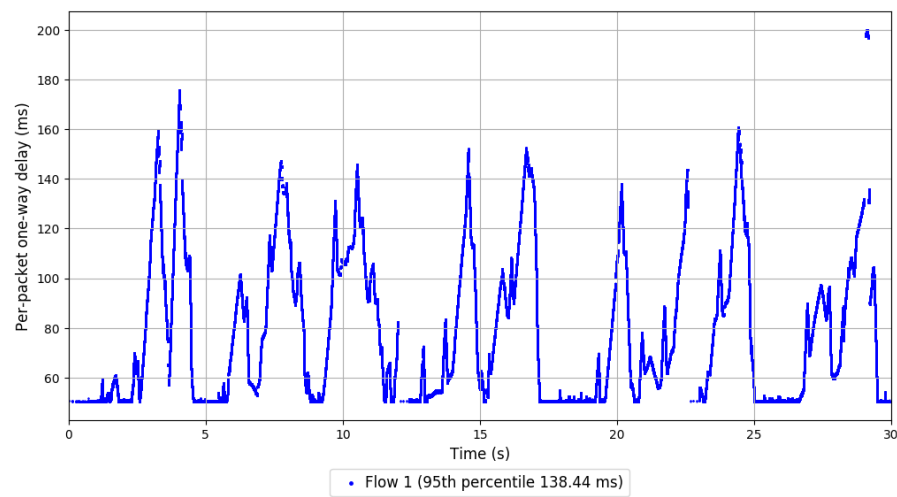
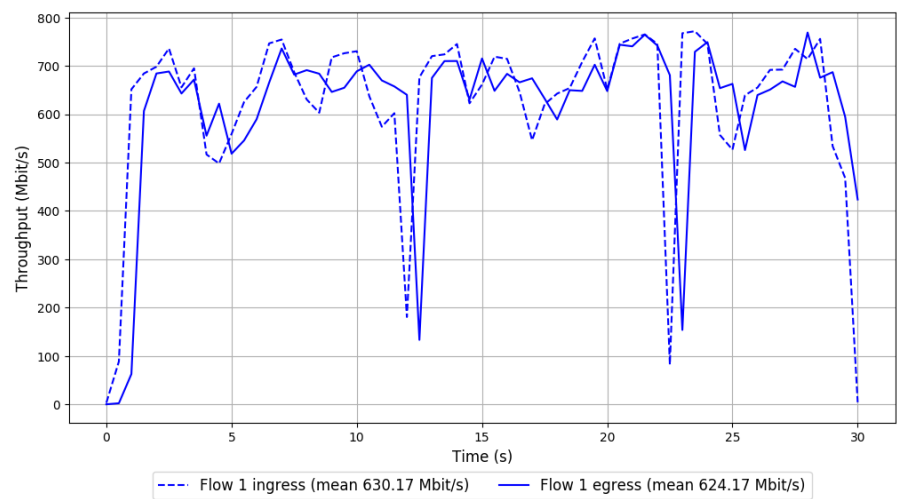


Run 2: Statistics of TCP BBR

Start at: 2018-09-05 07:00:42
End at: 2018-09-05 07:01:12
Local clock offset: -0.231 ms
Remote clock offset: -0.049 ms

Below is generated by plot.py at 2018-09-05 07:12:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 624.17 Mbit/s
95th percentile per-packet one-way delay: 138.445 ms
Loss rate: 1.29%
-- Flow 1:
Average throughput: 624.17 Mbit/s
95th percentile per-packet one-way delay: 138.445 ms
Loss rate: 1.29%

Run 2: Report of TCP BBR — Data Link

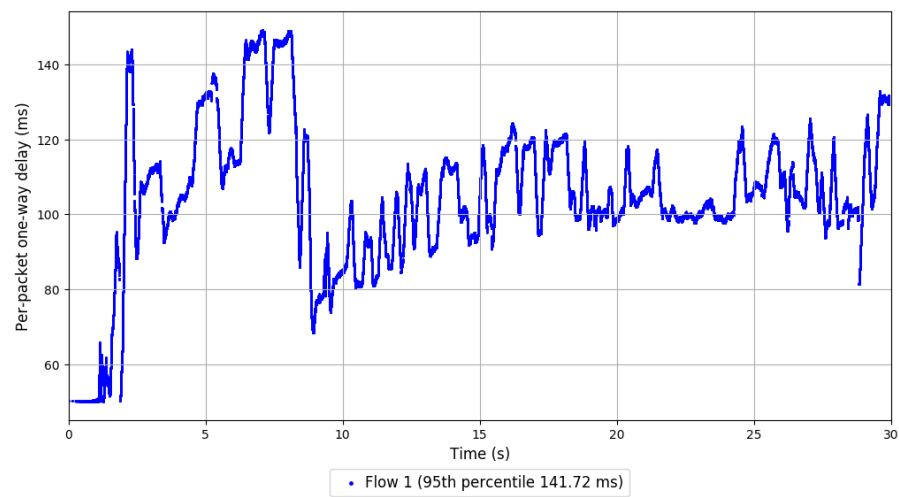
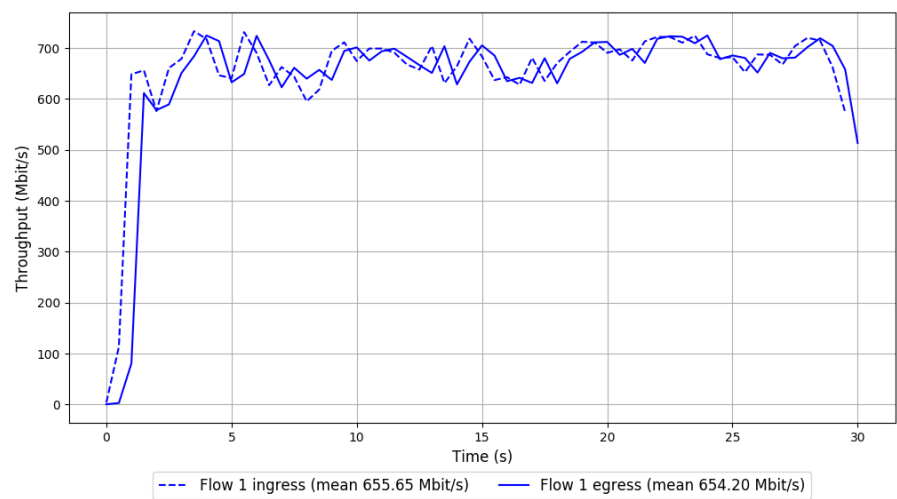


Run 1: Statistics of TCP Cubic

Start at: 2018-09-05 06:52:52
End at: 2018-09-05 06:53:22
Local clock offset: -0.425 ms
Remote clock offset: -0.109 ms

Below is generated by plot.py at 2018-09-05 07:12:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 654.20 Mbit/s
95th percentile per-packet one-way delay: 141.721 ms
Loss rate: 0.56%
-- Flow 1:
Average throughput: 654.20 Mbit/s
95th percentile per-packet one-way delay: 141.721 ms
Loss rate: 0.56%

Run 1: Report of TCP Cubic — Data Link

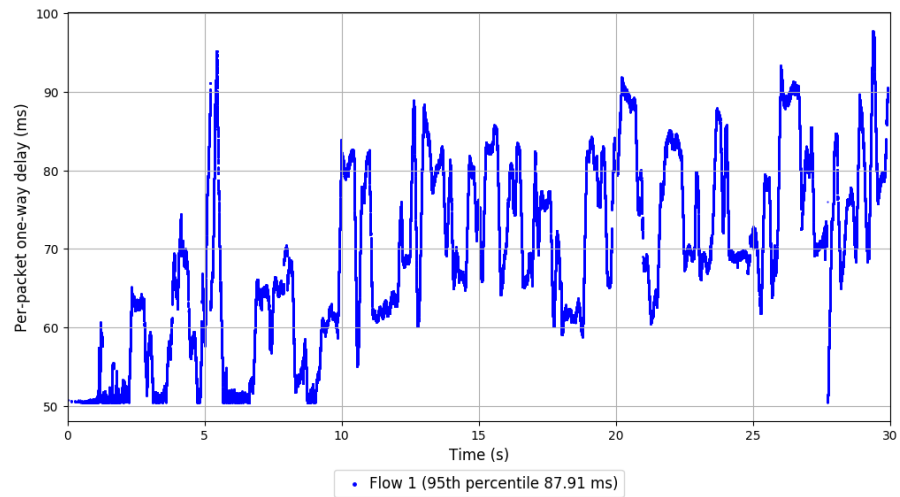
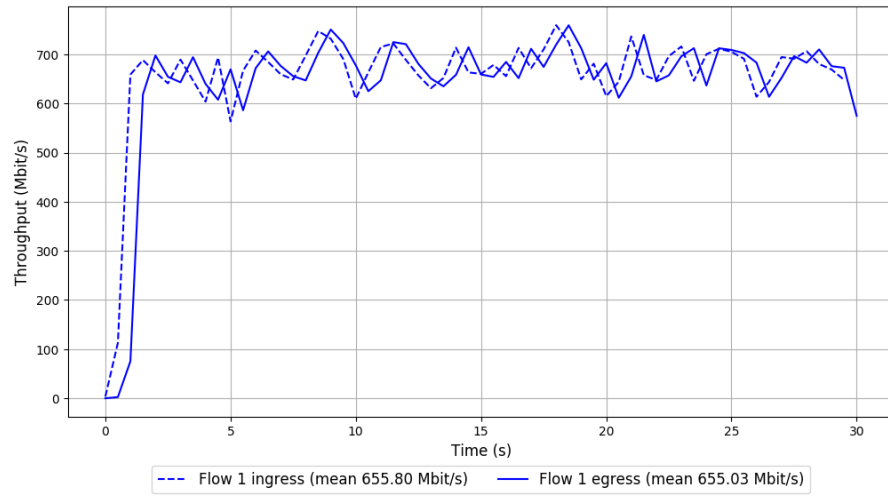


Run 2: Statistics of TCP Cubic

Start at: 2018-09-05 06:59:05
End at: 2018-09-05 06:59:35
Local clock offset: -0.269 ms
Remote clock offset: -0.081 ms

Below is generated by plot.py at 2018-09-05 07:12:08
Datalink statistics
-- Total of 1 flow:
Average throughput: 655.03 Mbit/s
95th percentile per-packet one-way delay: 87.914 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 655.03 Mbit/s
95th percentile per-packet one-way delay: 87.914 ms
Loss rate: 0.46%

Run 2: Report of TCP Cubic — Data Link



Run 1: Statistics of Indigo

Start at: 2018-09-05 06:51:25
End at: 2018-09-05 06:51:55
Local clock offset: -0.267 ms
Remote clock offset: -0.073 ms

Below is generated by plot.py at 2018-09-05 07:12:08

Datalink statistics

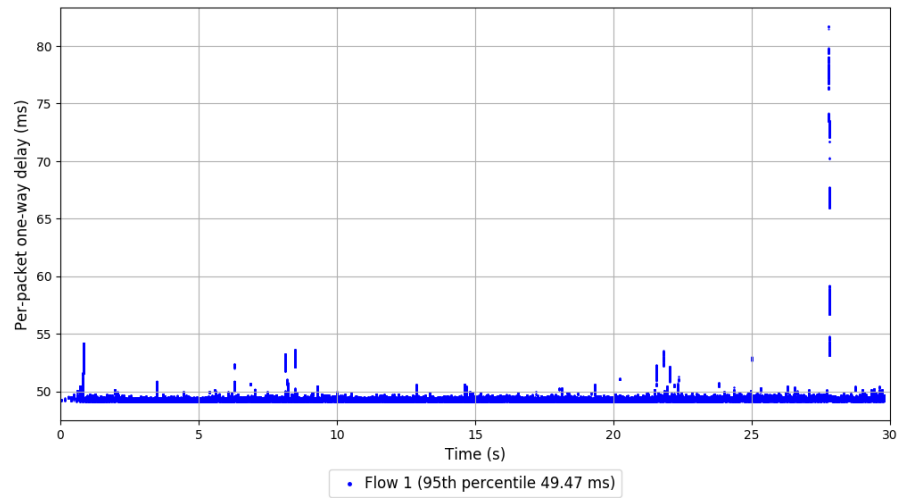
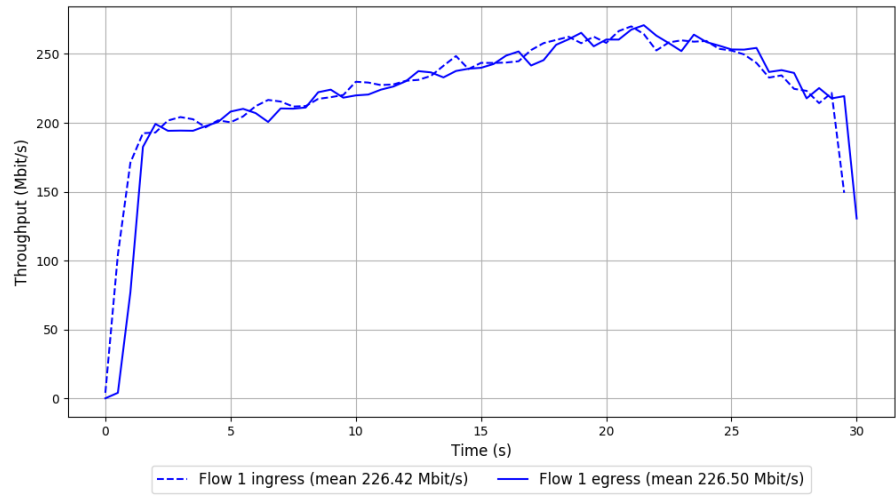
-- Total of 1 flow:

Average throughput: 226.50 Mbit/s
95th percentile per-packet one-way delay: 49.472 ms
Loss rate: 0.32%

-- Flow 1:

Average throughput: 226.50 Mbit/s
95th percentile per-packet one-way delay: 49.472 ms
Loss rate: 0.32%

Run 1: Report of Indigo — Data Link

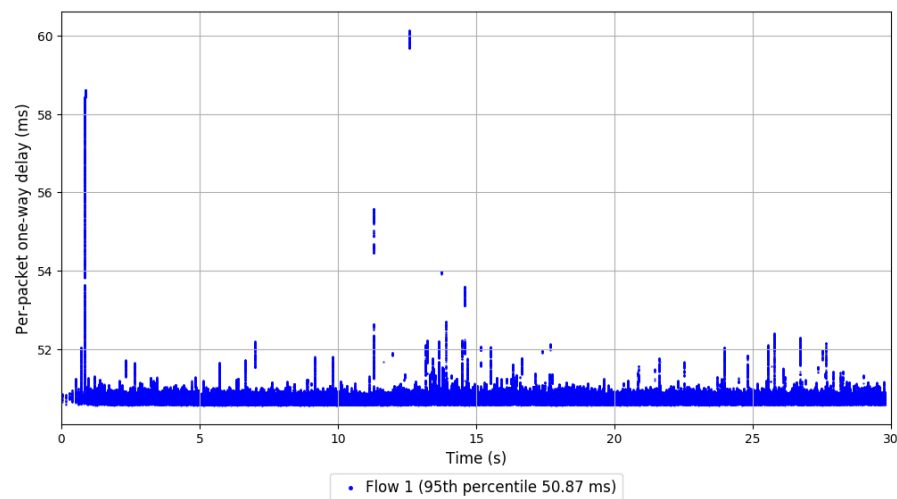
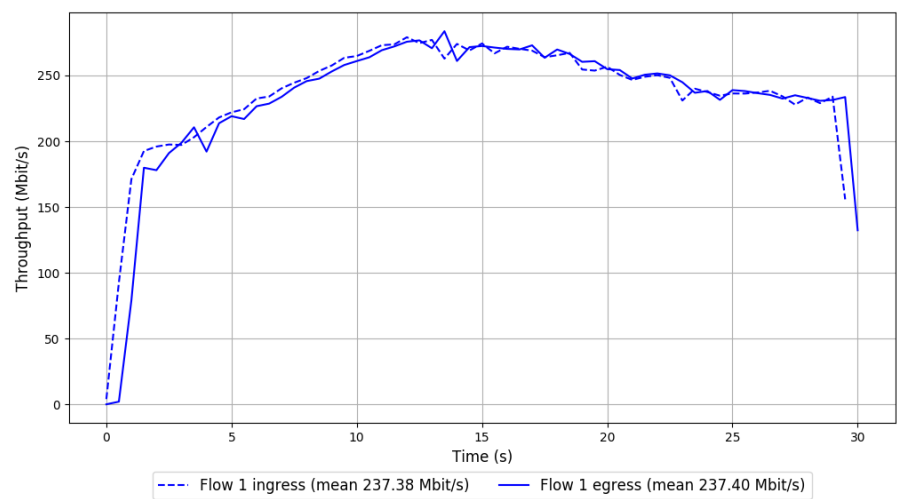


Run 2: Statistics of Indigo

Start at: 2018-09-05 06:57:38
End at: 2018-09-05 06:58:08
Local clock offset: -0.238 ms
Remote clock offset: -0.069 ms

Below is generated by plot.py at 2018-09-05 07:12:08
Datalink statistics
-- Total of 1 flow:
Average throughput: 237.40 Mbit/s
95th percentile per-packet one-way delay: 50.873 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 237.40 Mbit/s
95th percentile per-packet one-way delay: 50.873 ms
Loss rate: 0.33%

Run 2: Report of Indigo — Data Link

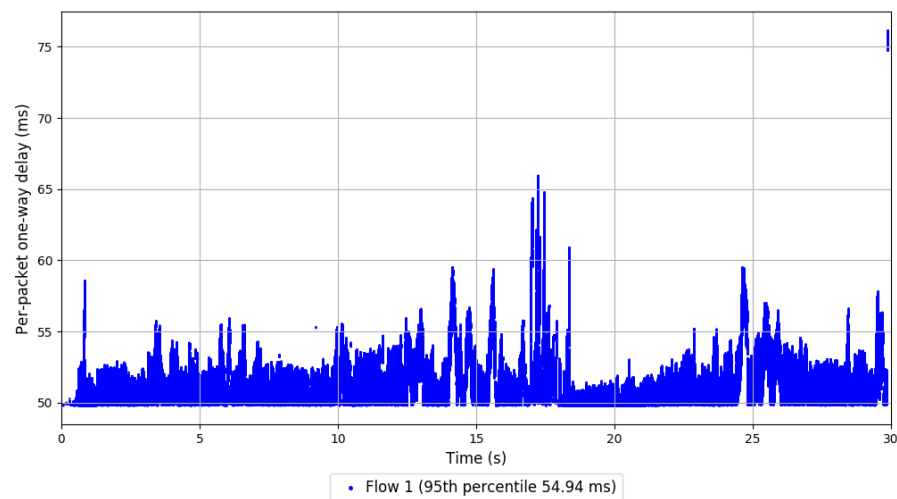
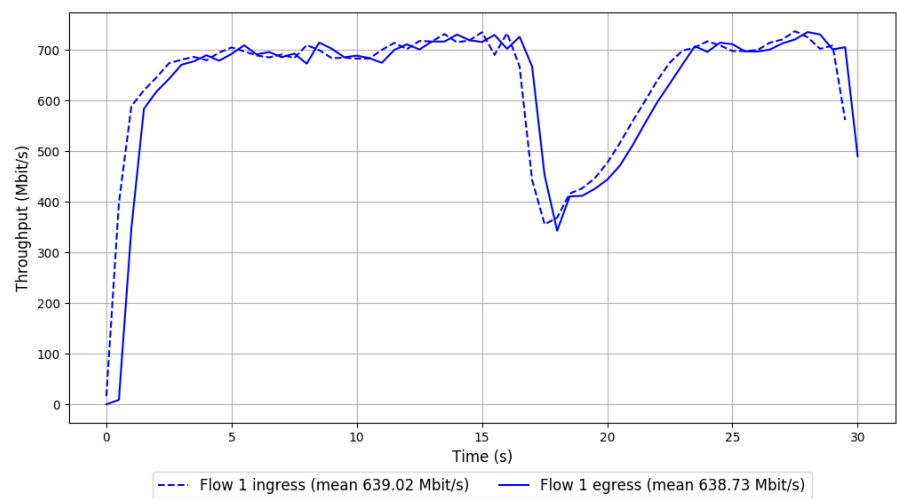


Run 1: Statistics of Muses-25

Start at: 2018-09-05 06:49:49
End at: 2018-09-05 06:50:19
Local clock offset: -0.347 ms
Remote clock offset: -0.138 ms

Below is generated by plot.py at 2018-09-05 07:12:08
Datalink statistics
-- Total of 1 flow:
Average throughput: 638.73 Mbit/s
95th percentile per-packet one-way delay: 54.936 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 638.73 Mbit/s
95th percentile per-packet one-way delay: 54.936 ms
Loss rate: 0.38%

Run 1: Report of Muses-25 — Data Link



Run 2: Statistics of Muses-25

Start at: 2018-09-05 06:56:08
End at: 2018-09-05 06:56:38
Local clock offset: -0.362 ms
Remote clock offset: -0.065 ms

Below is generated by plot.py at 2018-09-05 07:12:08
Datalink statistics
-- Total of 1 flow:
Average throughput: 508.72 Mbit/s
95th percentile per-packet one-way delay: 57.846 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 508.72 Mbit/s
95th percentile per-packet one-way delay: 57.846 ms
Loss rate: 0.33%

Run 2: Report of Muses-25 — Data Link

