

Pantheon Report

Generated at 2018-08-31 13:43:46 (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.

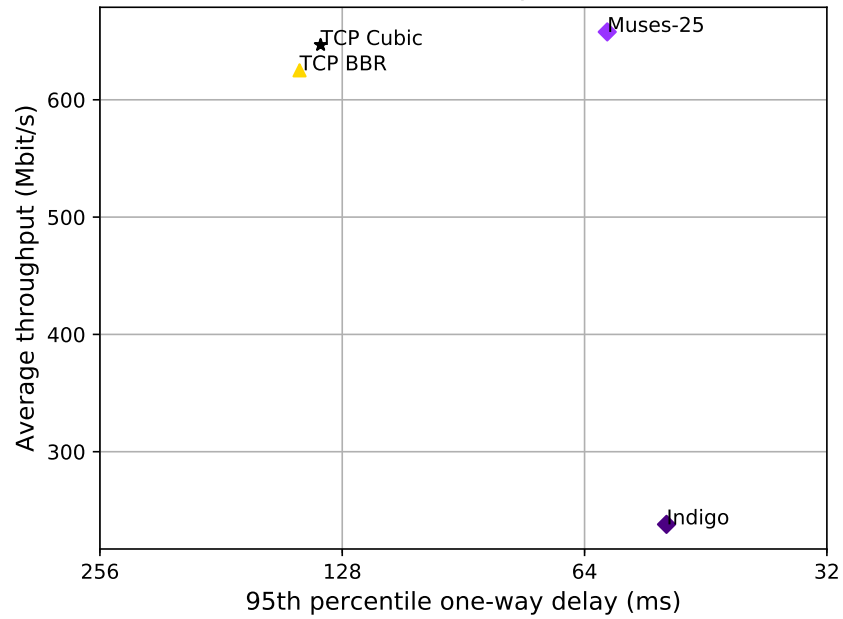
System info:

```
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
```

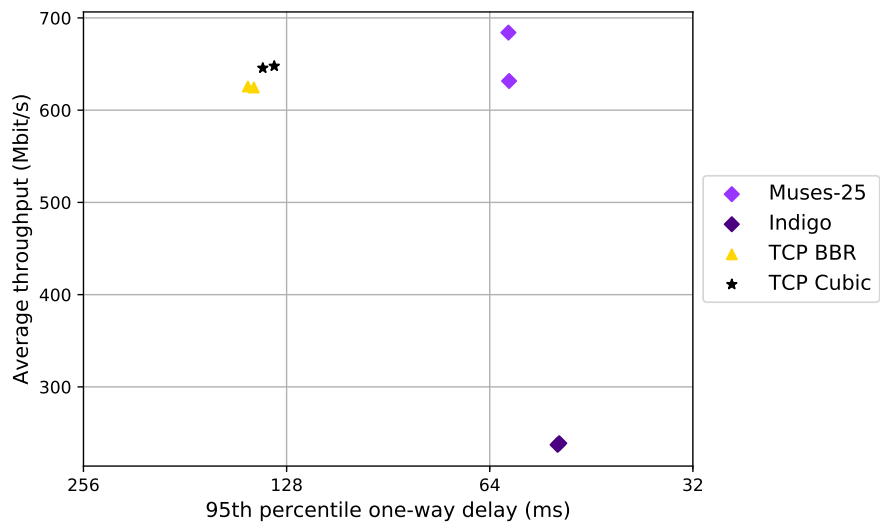
Git summary:

```
branch: muses @ e3c5aa19ca94c3066828fb83f16a8fb6b2731e7a
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf5e58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ b59e0d118c50af3579569c462d33045741c85981
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



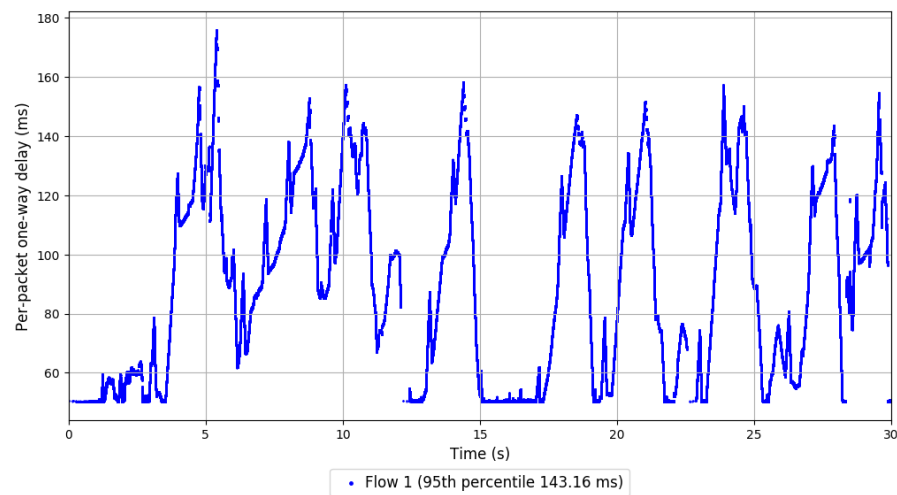
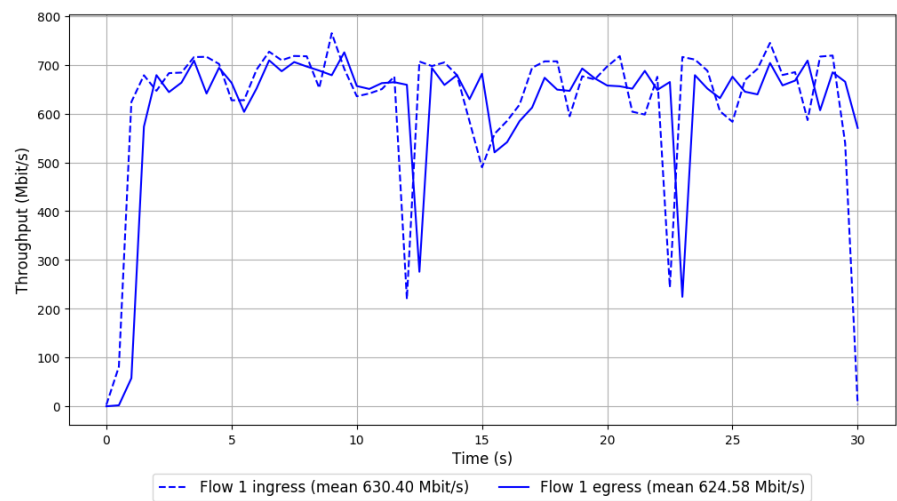
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	2	625.12	144.62	1.35
TCP Cubic	2	646.73	136.17	0.49
Indigo	2	238.06	50.63	0.33
Muses-25	2	657.87	59.98	0.35

Run 1: Statistics of TCP BBR

Start at: 2018-08-31 13:22:08
End at: 2018-08-31 13:22:38
Local clock offset: -0.391 ms
Remote clock offset: -0.462 ms

Below is generated by plot.py at 2018-08-31 13:42:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 624.58 Mbit/s
95th percentile per-packet one-way delay: 143.158 ms
Loss rate: 1.26%
-- Flow 1:
Average throughput: 624.58 Mbit/s
95th percentile per-packet one-way delay: 143.158 ms
Loss rate: 1.26%

Run 1: Report of TCP BBR — Data Link

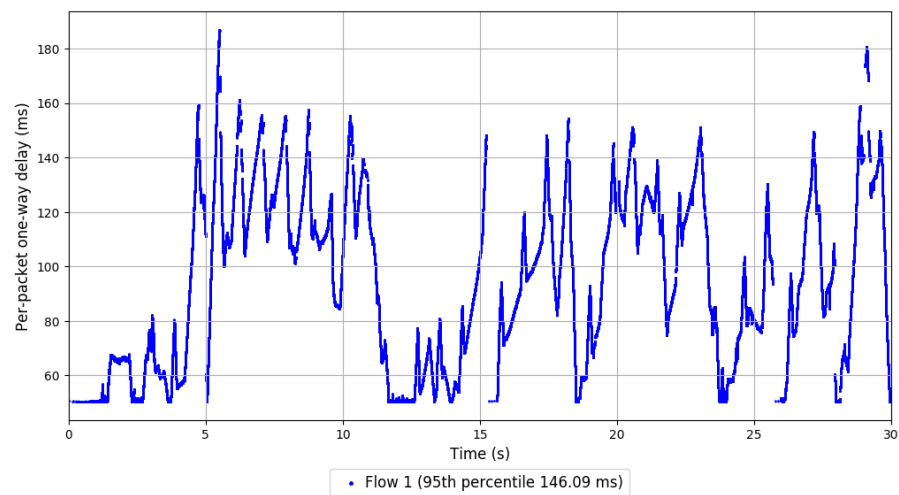
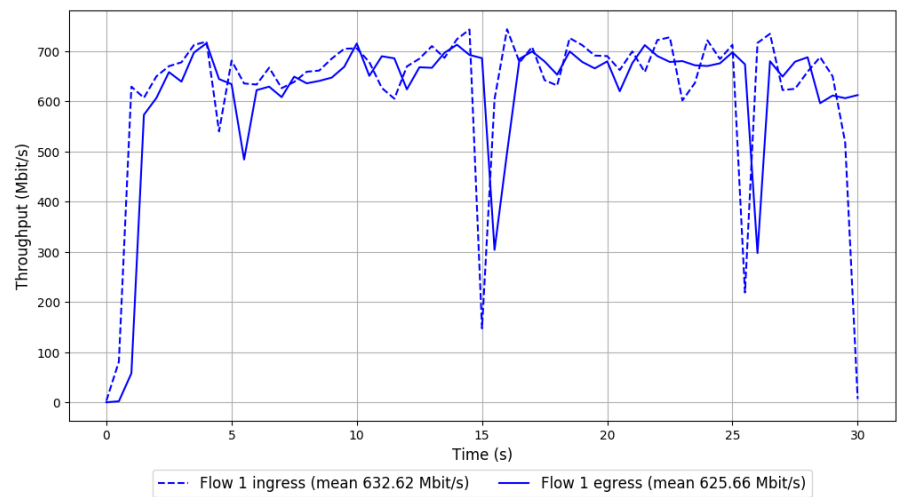


Run 2: Statistics of TCP BBR

Start at: 2018-08-31 13:28:22
End at: 2018-08-31 13:28:52
Local clock offset: -0.629 ms
Remote clock offset: -0.625 ms

Below is generated by plot.py at 2018-08-31 13:42:19
Datalink statistics
-- Total of 1 flow:
Average throughput: 625.66 Mbit/s
95th percentile per-packet one-way delay: 146.091 ms
Loss rate: 1.44%
-- Flow 1:
Average throughput: 625.66 Mbit/s
95th percentile per-packet one-way delay: 146.091 ms
Loss rate: 1.44%

Run 2: Report of TCP BBR — Data Link

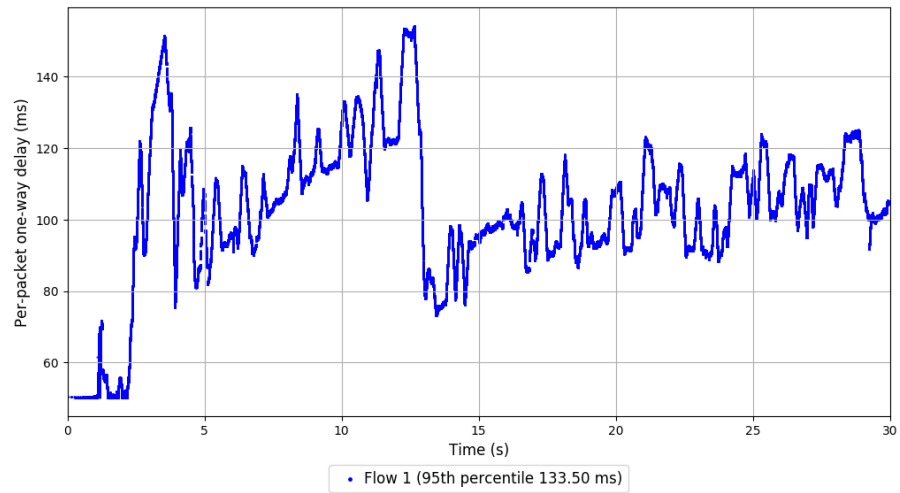
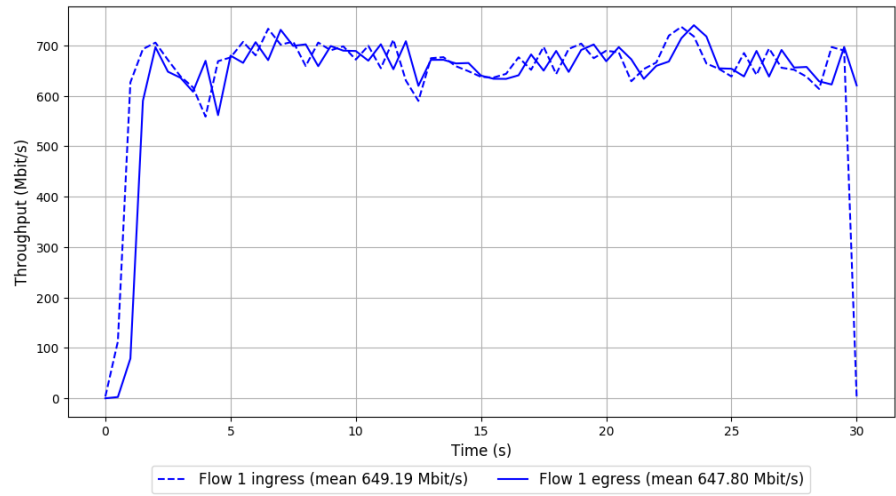


Run 1: Statistics of TCP Cubic

Start at: 2018-08-31 13:20:32
End at: 2018-08-31 13:21:02
Local clock offset: -0.607 ms
Remote clock offset: -0.568 ms

Below is generated by plot.py at 2018-08-31 13:42:27
Datalink statistics
-- Total of 1 flow:
Average throughput: 647.80 Mbit/s
95th percentile per-packet one-way delay: 133.499 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 647.80 Mbit/s
95th percentile per-packet one-way delay: 133.499 ms
Loss rate: 0.55%

Run 1: Report of TCP Cubic — Data Link

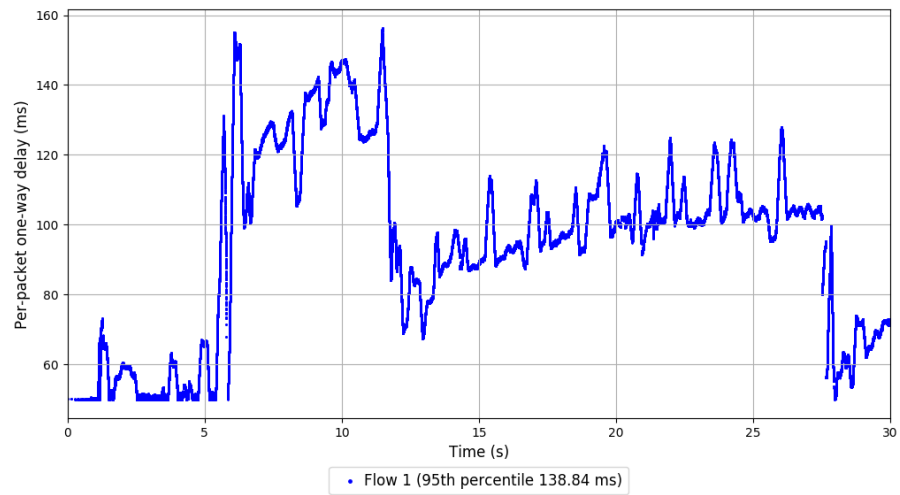
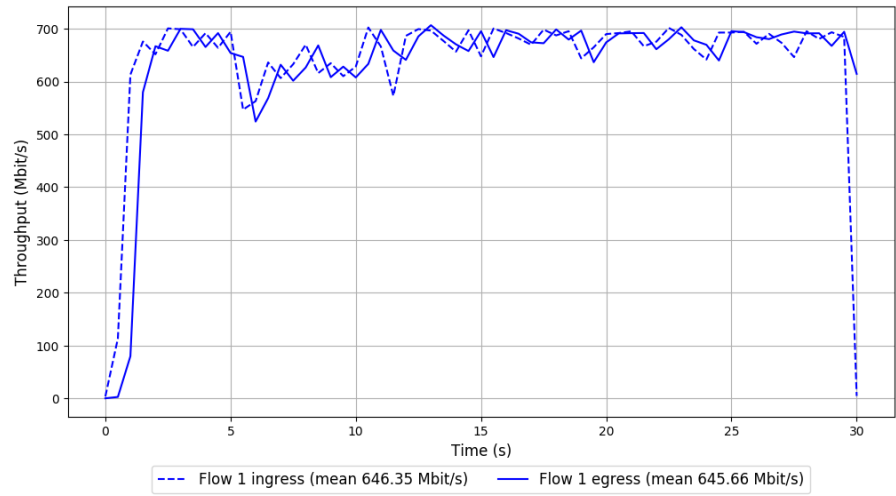


Run 2: Statistics of TCP Cubic

Start at: 2018-08-31 13:26:47
End at: 2018-08-31 13:27:17
Local clock offset: -0.921 ms
Remote clock offset: -0.615 ms

Below is generated by plot.py at 2018-08-31 13:42:27
Datalink statistics
-- Total of 1 flow:
Average throughput: 645.66 Mbit/s
95th percentile per-packet one-way delay: 138.840 ms
Loss rate: 0.44%
-- Flow 1:
Average throughput: 645.66 Mbit/s
95th percentile per-packet one-way delay: 138.840 ms
Loss rate: 0.44%

Run 2: Report of TCP Cubic — Data Link



Run 1: Statistics of Indigo

Start at: 2018-08-31 13:23:44

End at: 2018-08-31 13:24:14

Local clock offset: -0.414 ms

Remote clock offset: -0.594 ms

Below is generated by plot.py at 2018-08-31 13:42:27

Datalink statistics

-- Total of 1 flow:

Average throughput: 237.19 Mbit/s

95th percentile per-packet one-way delay: 50.769 ms

Loss rate: 0.33%

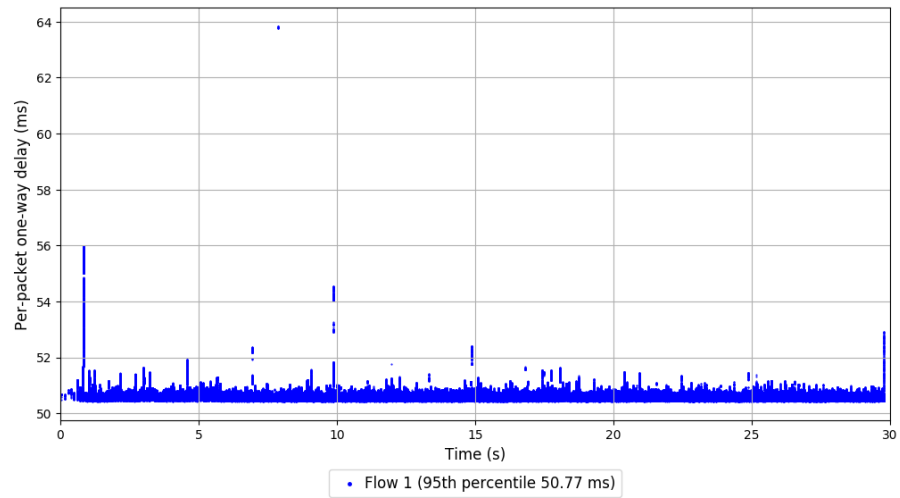
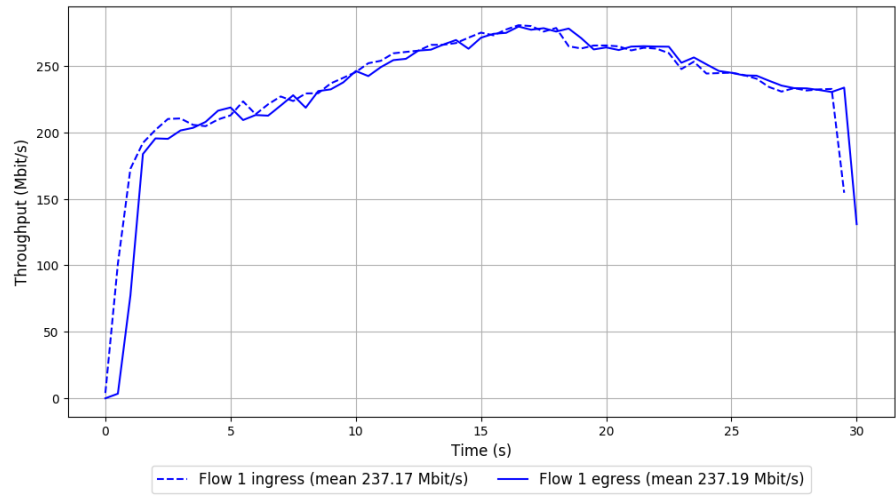
-- Flow 1:

Average throughput: 237.19 Mbit/s

95th percentile per-packet one-way delay: 50.769 ms

Loss rate: 0.33%

Run 1: Report of Indigo — Data Link

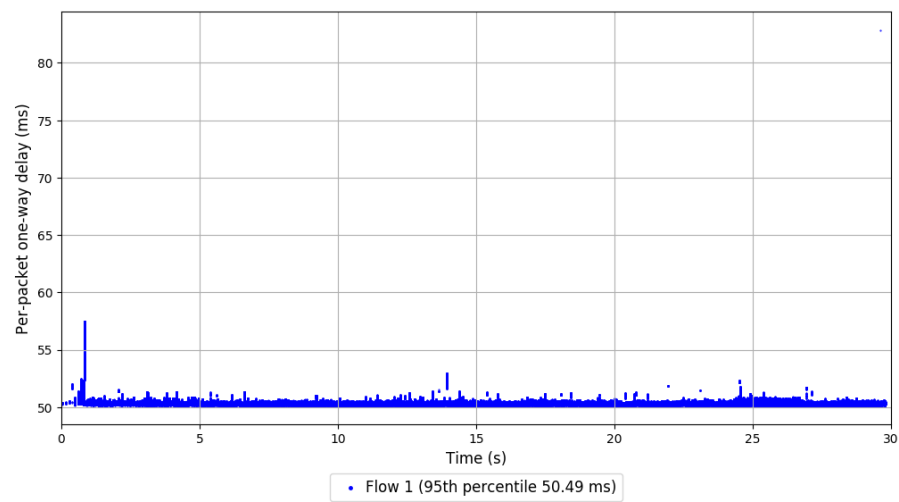
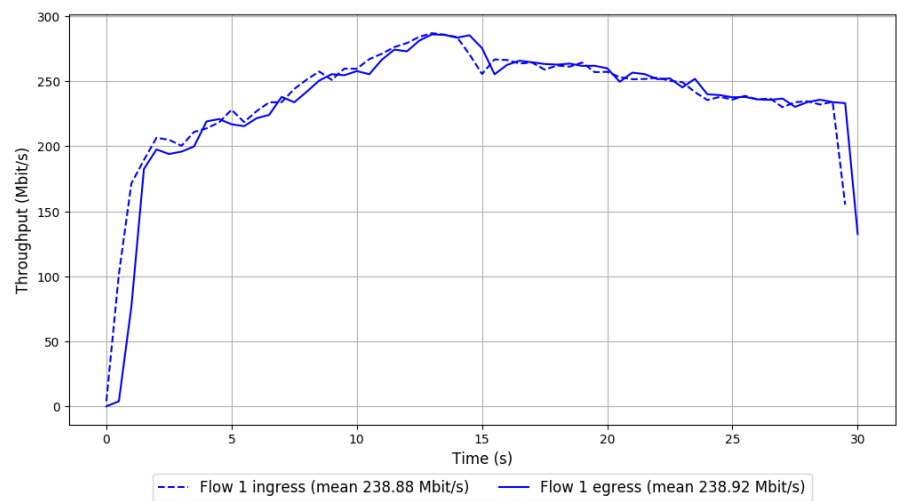


Run 2: Statistics of Indigo

Start at: 2018-08-31 13:29:58
End at: 2018-08-31 13:30:28
Local clock offset: -0.716 ms
Remote clock offset: -0.651 ms

Below is generated by plot.py at 2018-08-31 13:42:27
Datalink statistics
-- Total of 1 flow:
Average throughput: 238.92 Mbit/s
95th percentile per-packet one-way delay: 50.489 ms
Loss rate: 0.32%
-- Flow 1:
Average throughput: 238.92 Mbit/s
95th percentile per-packet one-way delay: 50.489 ms
Loss rate: 0.32%

Run 2: Report of Indigo — Data Link

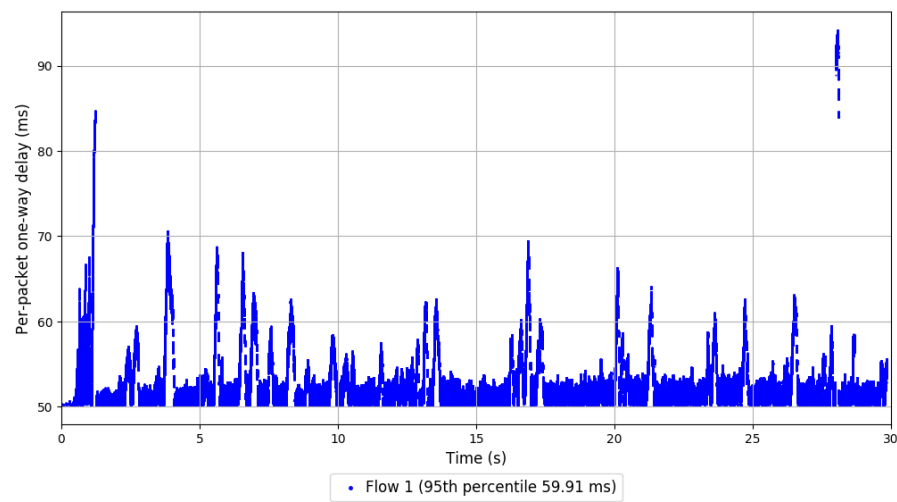
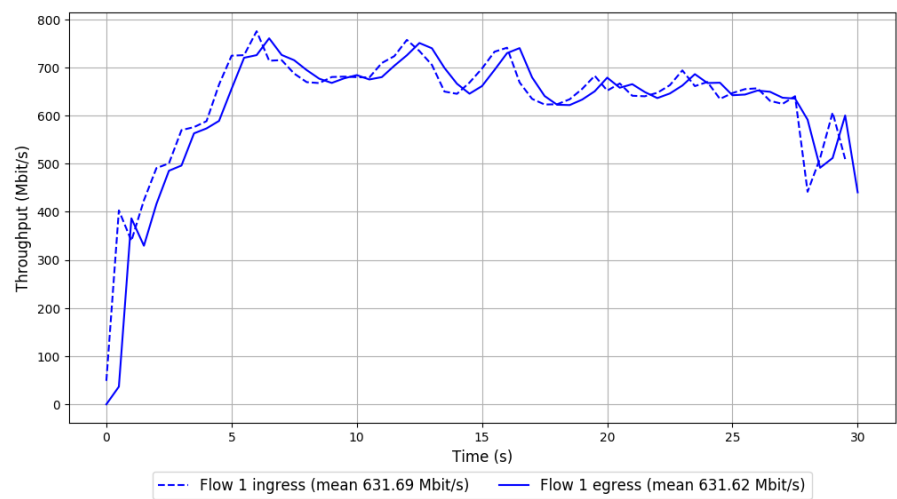


Run 1: Statistics of Muses-25

Start at: 2018-08-31 13:25:10
End at: 2018-08-31 13:25:40
Local clock offset: -0.771 ms
Remote clock offset: -0.598 ms

Below is generated by plot.py at 2018-08-31 13:43:40
Datalink statistics
-- Total of 1 flow:
Average throughput: 631.62 Mbit/s
95th percentile per-packet one-way delay: 59.912 ms
Loss rate: 0.35%
-- Flow 1:
Average throughput: 631.62 Mbit/s
95th percentile per-packet one-way delay: 59.912 ms
Loss rate: 0.35%

Run 1: Report of Muses-25 — Data Link



Run 2: Statistics of Muses-25

Start at: 2018-08-31 13:31:25
End at: 2018-08-31 13:31:55
Local clock offset: -0.234 ms
Remote clock offset: -0.658 ms

Below is generated by plot.py at 2018-08-31 13:43:44
Datalink statistics
-- Total of 1 flow:
Average throughput: 684.11 Mbit/s
95th percentile per-packet one-way delay: 60.048 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 684.11 Mbit/s
95th percentile per-packet one-way delay: 60.048 ms
Loss rate: 0.36%

Run 2: Report of Muses-25 — Data Link

