

Pantheon Report

Generated at 2018-09-03 13:38:38 (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.

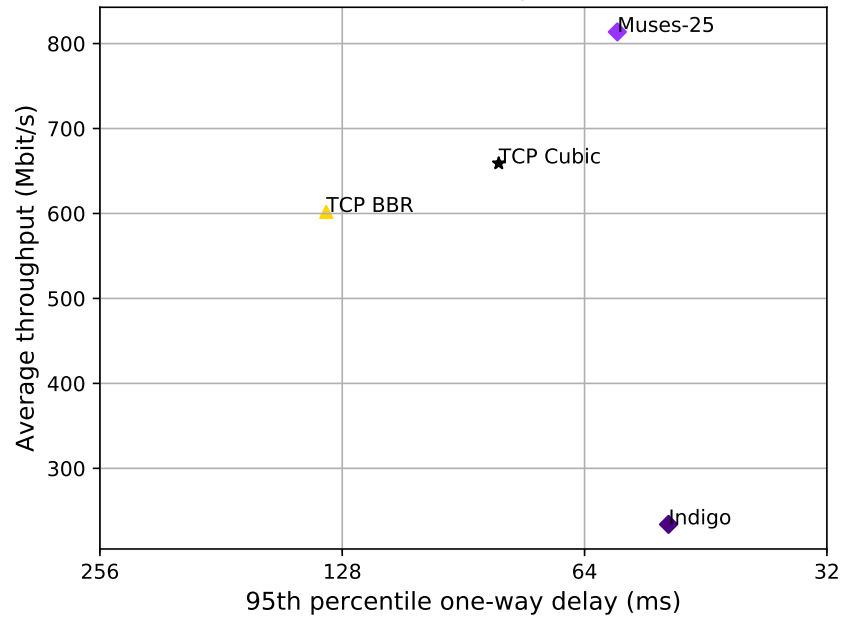
System info:

```
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
```

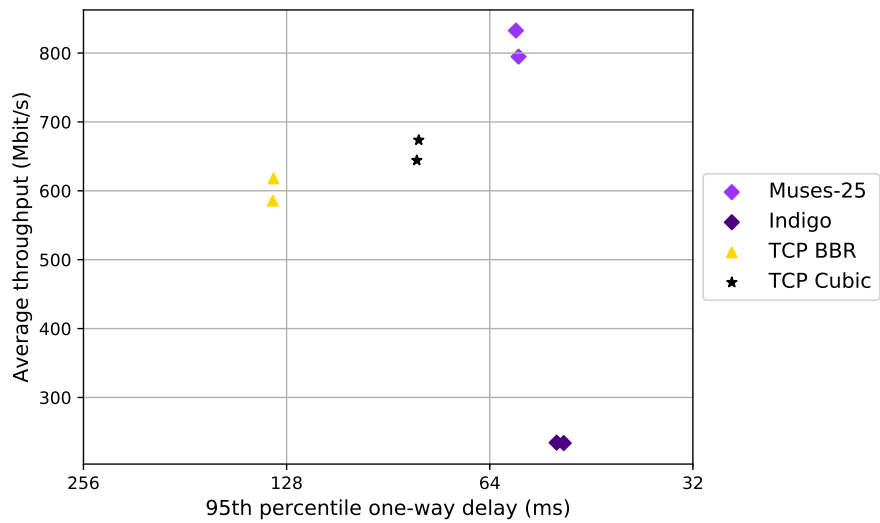
Git summary:

```
branch: muses @ f309f5459e2c5237279a184e52ece7a2b47ef1c9
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf5e58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ b8d5019b83a3a678804d830fcfe1da7b3a63421b
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 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	601.82	134.01	0.87
TCP Cubic	2	658.98	81.81	0.43
Indigo	2	234.07	50.34	0.34
Muses-25	2	813.70	58.27	0.41

Run 1: Statistics of TCP BBR

Start at: 2018-09-03 13:15:28

End at: 2018-09-03 13:15:58

Local clock offset: -0.564 ms

Remote clock offset: -0.071 ms

Below is generated by plot.py at 2018-09-03 13:38:02

Datalink statistics

-- Total of 1 flow:

Average throughput: 617.97 Mbit/s

95th percentile per-packet one-way delay: 133.823 ms

Loss rate: 0.91%

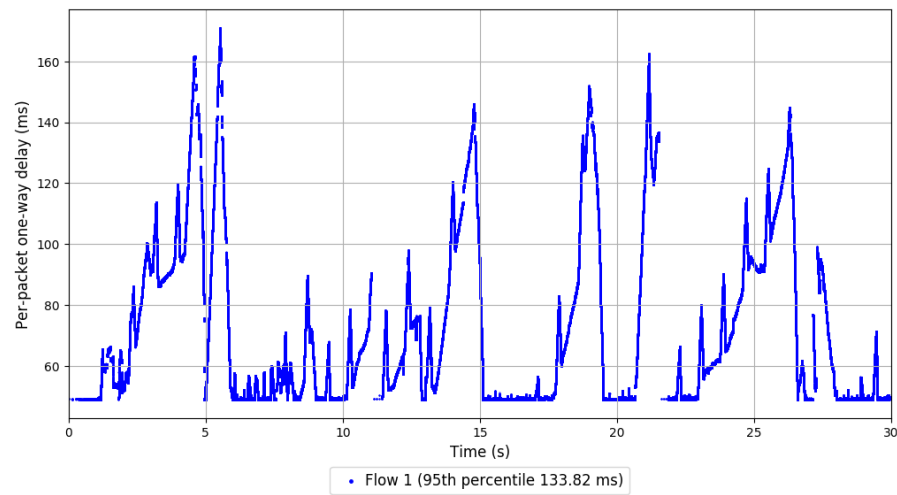
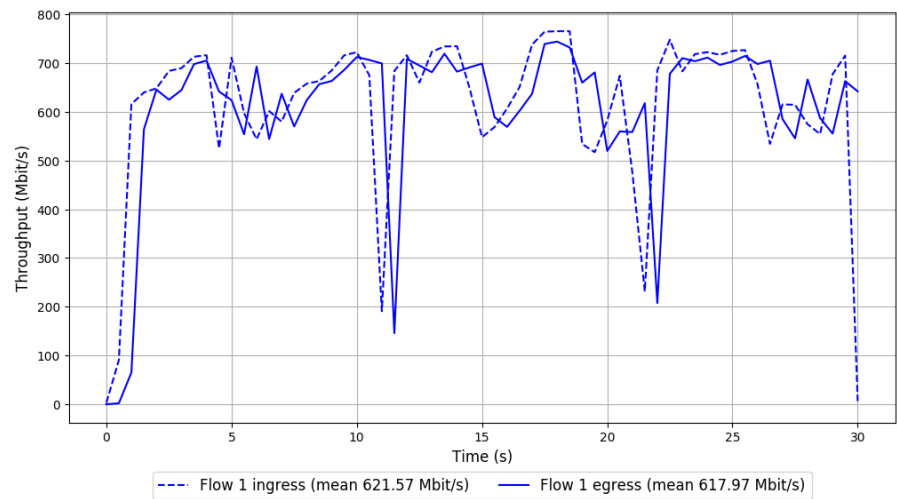
-- Flow 1:

Average throughput: 617.97 Mbit/s

95th percentile per-packet one-way delay: 133.823 ms

Loss rate: 0.91%

Run 1: Report of TCP BBR — Data Link

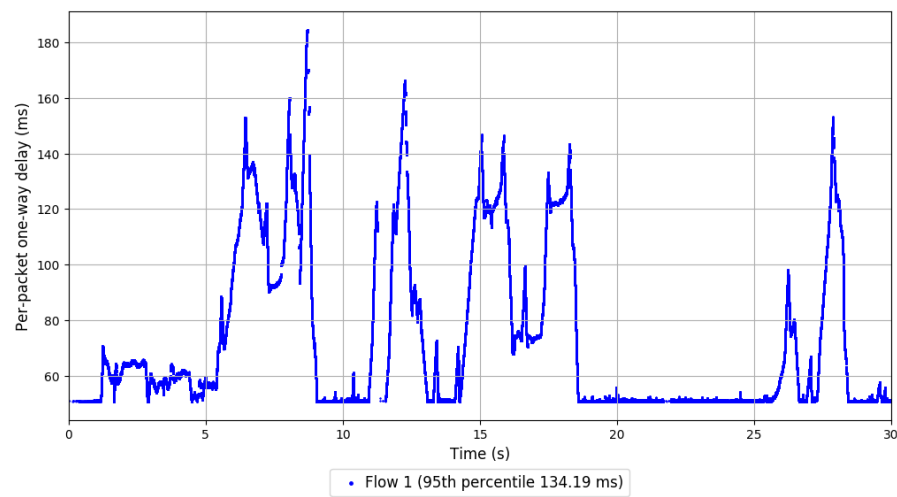
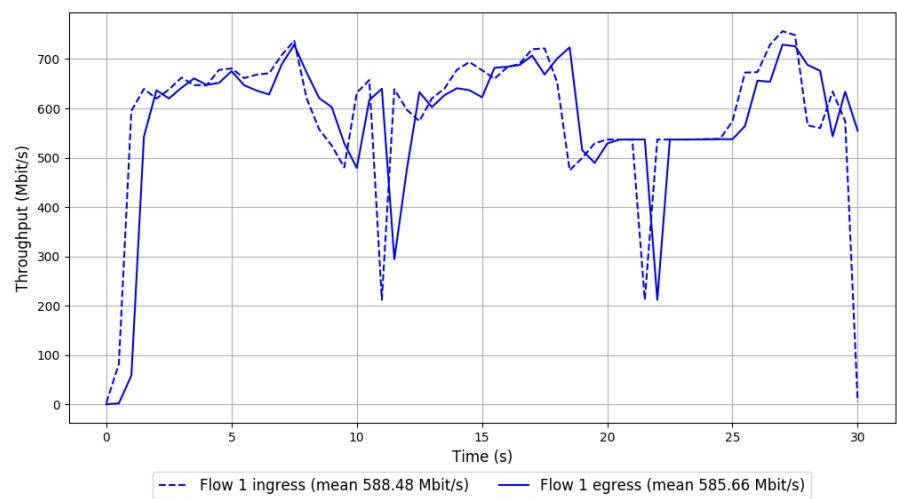


Run 2: Statistics of TCP BBR

Start at: 2018-09-03 13:21:43
End at: 2018-09-03 13:22:13
Local clock offset: -0.077 ms
Remote clock offset: -0.063 ms

Below is generated by plot.py at 2018-09-03 13:38:02
Datalink statistics
-- Total of 1 flow:
Average throughput: 585.66 Mbit/s
95th percentile per-packet one-way delay: 134.189 ms
Loss rate: 0.83%
-- Flow 1:
Average throughput: 585.66 Mbit/s
95th percentile per-packet one-way delay: 134.189 ms
Loss rate: 0.83%

Run 2: Report of TCP BBR — Data Link

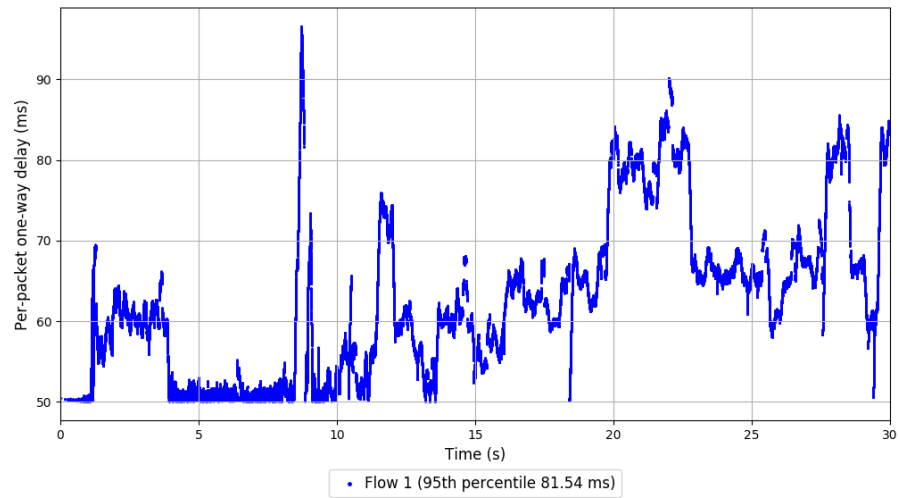
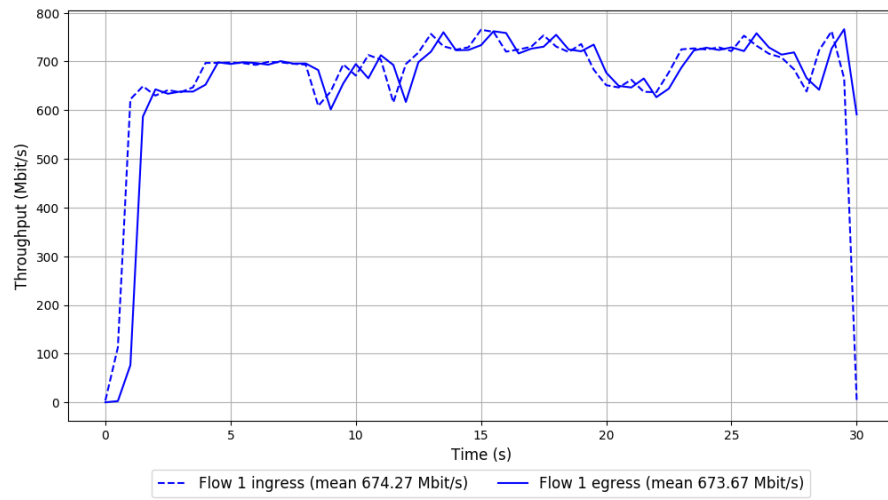


Run 1: Statistics of TCP Cubic

Start at: 2018-09-03 13:18:42
End at: 2018-09-03 13:19:12
Local clock offset: -0.786 ms
Remote clock offset: -0.057 ms

Below is generated by plot.py at 2018-09-03 13:38:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 673.67 Mbit/s
95th percentile per-packet one-way delay: 81.541 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 673.67 Mbit/s
95th percentile per-packet one-way delay: 81.541 ms
Loss rate: 0.42%

Run 1: Report of TCP Cubic — Data Link

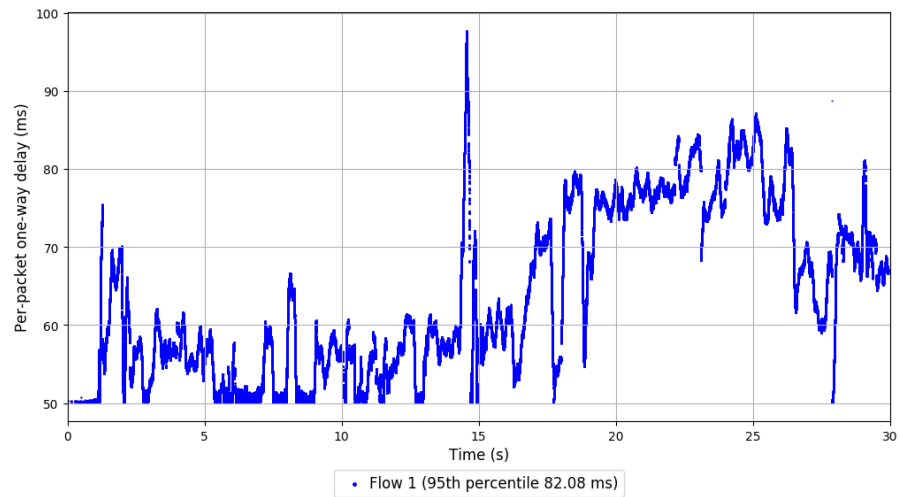
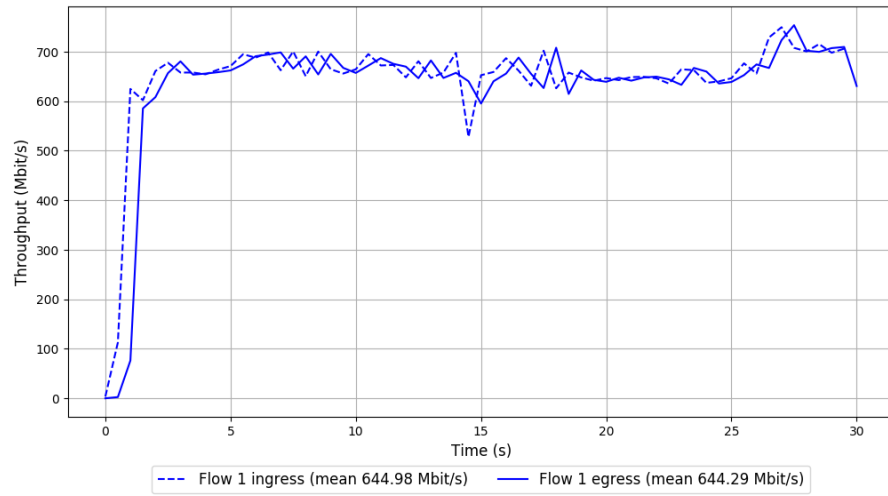


Run 2: Statistics of TCP Cubic

Start at: 2018-09-03 13:24:54
End at: 2018-09-03 13:25:24
Local clock offset: -0.557 ms
Remote clock offset: -0.042 ms

Below is generated by plot.py at 2018-09-03 13:38:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 644.29 Mbit/s
95th percentile per-packet one-way delay: 82.081 ms
Loss rate: 0.44%
-- Flow 1:
Average throughput: 644.29 Mbit/s
95th percentile per-packet one-way delay: 82.081 ms
Loss rate: 0.44%

Run 2: Report of TCP Cubic — Data Link



Run 1: Statistics of Indigo

Start at: 2018-09-03 13:20:18

End at: 2018-09-03 13:20:48

Local clock offset: -0.117 ms

Remote clock offset: 0.003 ms

Below is generated by plot.py at 2018-09-03 13:38:22

Datalink statistics

-- Total of 1 flow:

Average throughput: 233.74 Mbit/s

95th percentile per-packet one-way delay: 49.726 ms

Loss rate: 0.32%

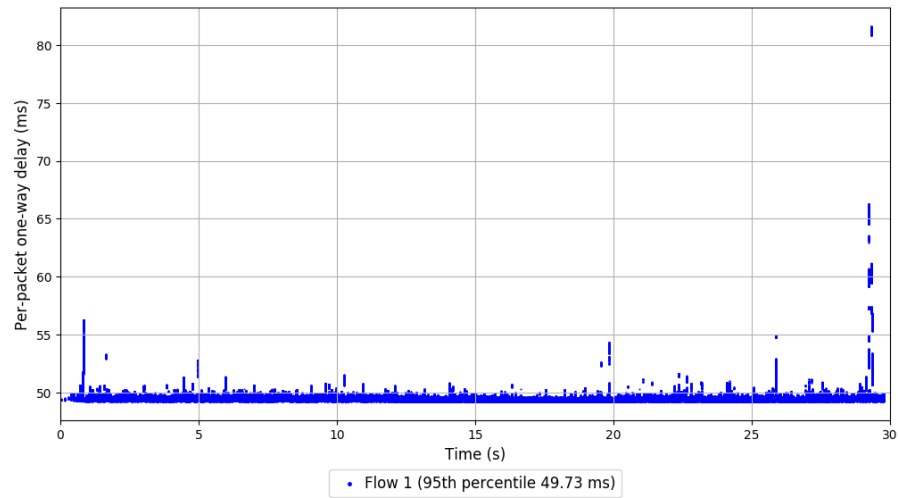
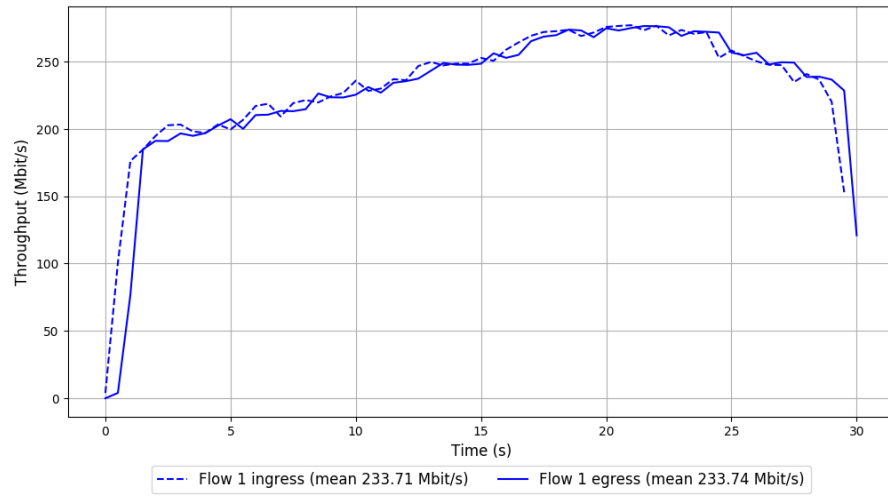
-- Flow 1:

Average throughput: 233.74 Mbit/s

95th percentile per-packet one-way delay: 49.726 ms

Loss rate: 0.32%

Run 1: Report of Indigo — Data Link

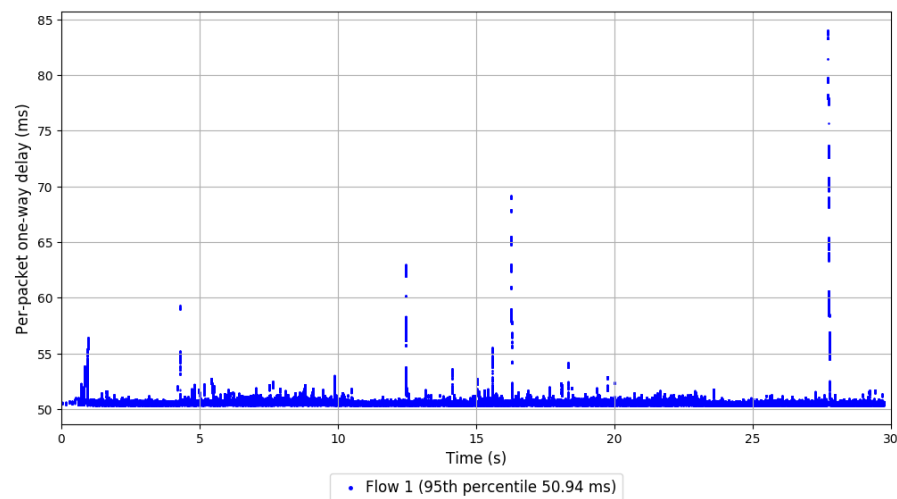
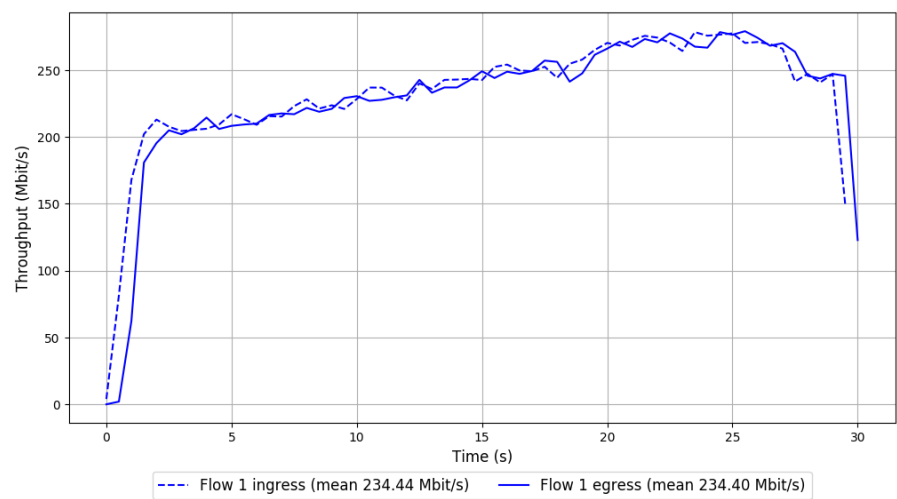


Run 2: Statistics of Indigo

Start at: 2018-09-03 13:26:30
End at: 2018-09-03 13:27:00
Local clock offset: -0.061 ms
Remote clock offset: -0.064 ms

Below is generated by plot.py at 2018-09-03 13:38:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 234.40 Mbit/s
95th percentile per-packet one-way delay: 50.944 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 234.40 Mbit/s
95th percentile per-packet one-way delay: 50.944 ms
Loss rate: 0.36%

Run 2: Report of Indigo — Data Link

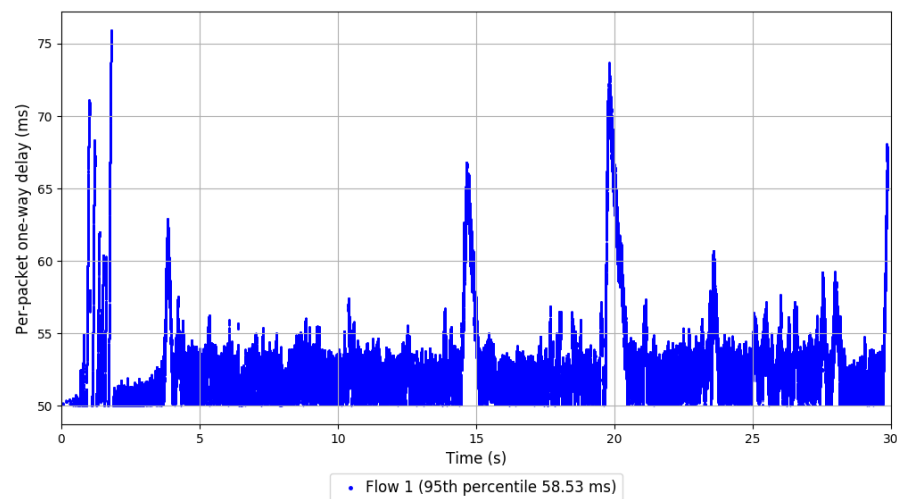
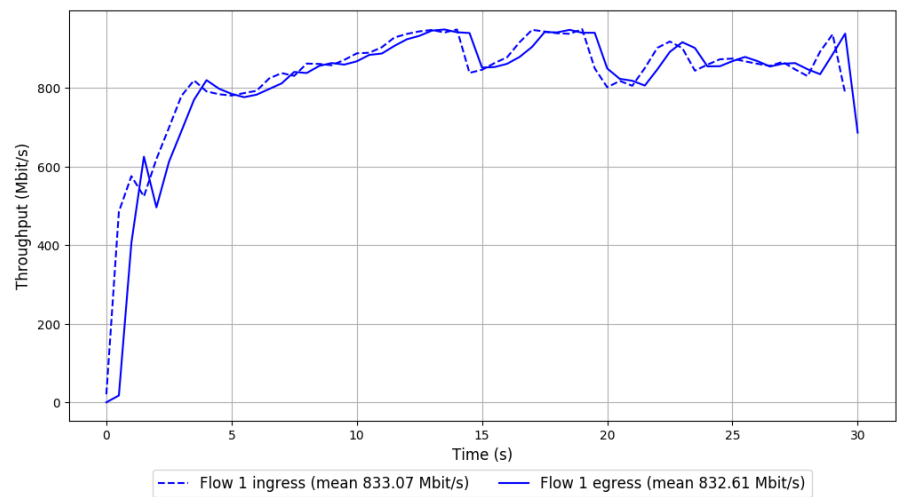


Run 1: Statistics of Muses-25

Start at: 2018-09-03 13:17:05
End at: 2018-09-03 13:17:35
Local clock offset: -0.063 ms
Remote clock offset: -0.064 ms

Below is generated by plot.py at 2018-09-03 13:38:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 832.61 Mbit/s
95th percentile per-packet one-way delay: 58.535 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 832.61 Mbit/s
95th percentile per-packet one-way delay: 58.535 ms
Loss rate: 0.39%

Run 1: Report of Muses-25 — Data Link



Run 2: Statistics of Muses-25

Start at: 2018-09-03 13:23:17
End at: 2018-09-03 13:23:47
Local clock offset: -0.235 ms
Remote clock offset: -0.007 ms

Below is generated by plot.py at 2018-09-03 13:38:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 794.79 Mbit/s
95th percentile per-packet one-way delay: 58.009 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 794.79 Mbit/s
95th percentile per-packet one-way delay: 58.009 ms
Loss rate: 0.42%

Run 2: Report of Muses-25 — Data Link

