

Pantheon Report

Generated at 2018-08-28 17:22:44 (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.

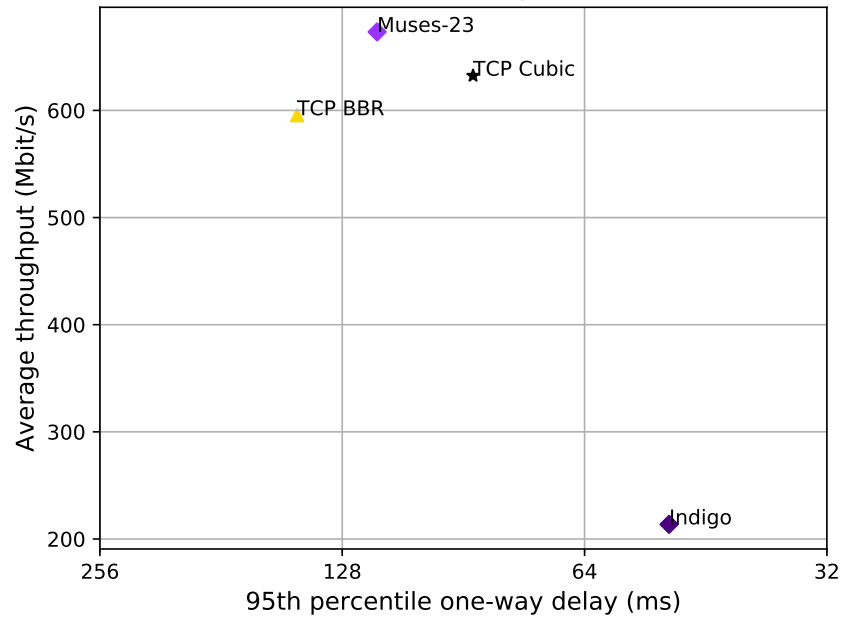
System info:

```
Linux 4.15.0-1017-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
```

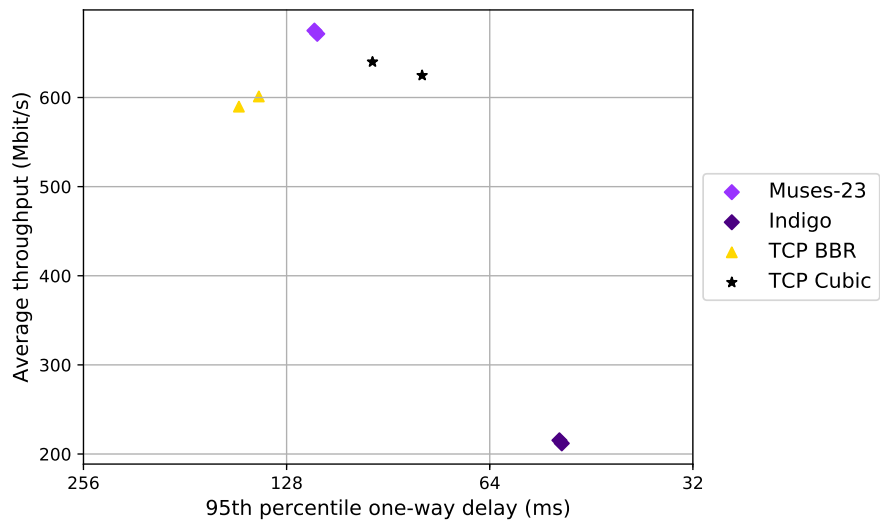
Git summary:

```
branch: muses-23 @ 88af05c5b0b7531637ca401951507a2fde628df6
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ b261c9e99c63be452bc16f94ce0caa99a4c9d39a
third_party/pantheon-tunnel @ cbf6e6db5ff5740dafa1771f813cd646339e1952
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	595.50	145.67	1.44
TCP Cubic	2	632.37	88.04	0.43
Indigo	2	213.64	50.26	0.37
Muses-23	2	673.25	115.85	0.65

Run 1: Statistics of TCP BBR

Start at: 2018-08-28 17:03:54

End at: 2018-08-28 17:04:24

Local clock offset: -0.772 ms

Remote clock offset: -0.115 ms

Below is generated by plot.py at 2018-08-28 17:20:54

Datalink statistics

-- Total of 1 flow:

Average throughput: 589.78 Mbit/s

95th percentile per-packet one-way delay: 150.619 ms

Loss rate: 1.80%

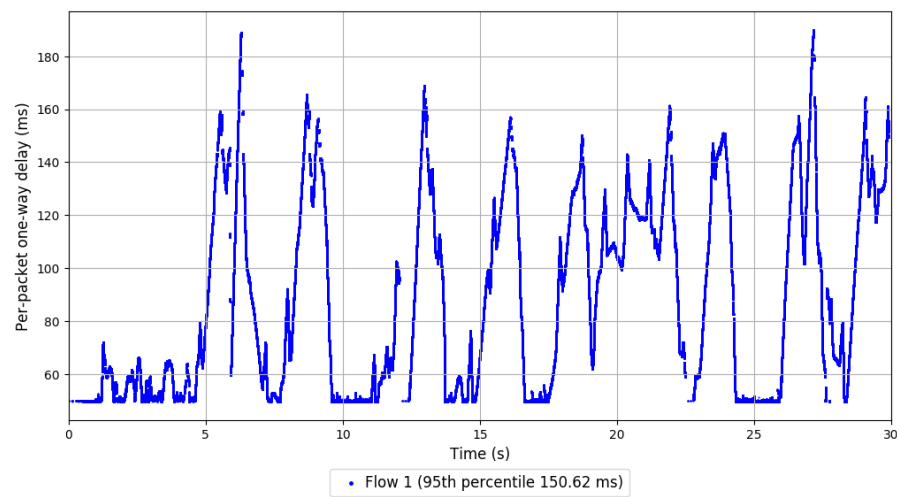
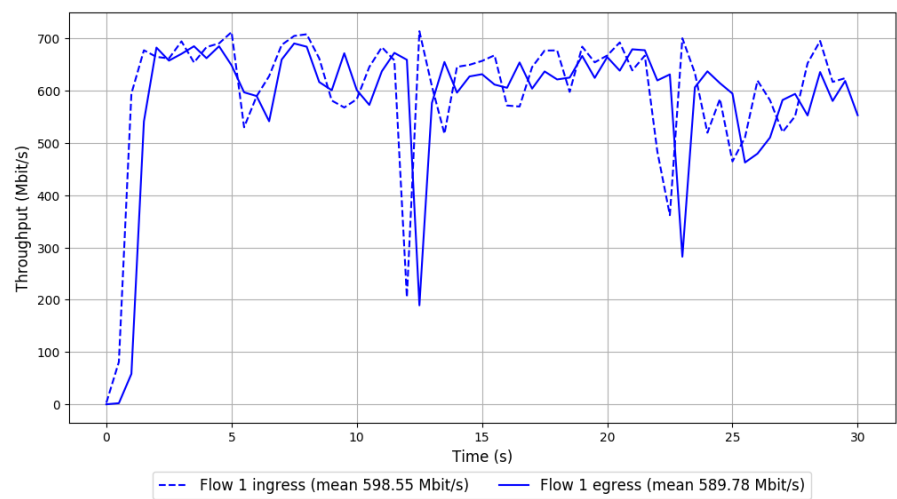
-- Flow 1:

Average throughput: 589.78 Mbit/s

95th percentile per-packet one-way delay: 150.619 ms

Loss rate: 1.80%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-08-28 17:10:06

End at: 2018-08-28 17:10:36

Local clock offset: 0.582 ms

Remote clock offset: -0.115 ms

Below is generated by plot.py at 2018-08-28 17:21:00

Datalink statistics

-- Total of 1 flow:

Average throughput: 601.21 Mbit/s

95th percentile per-packet one-way delay: 140.722 ms

Loss rate: 1.07%

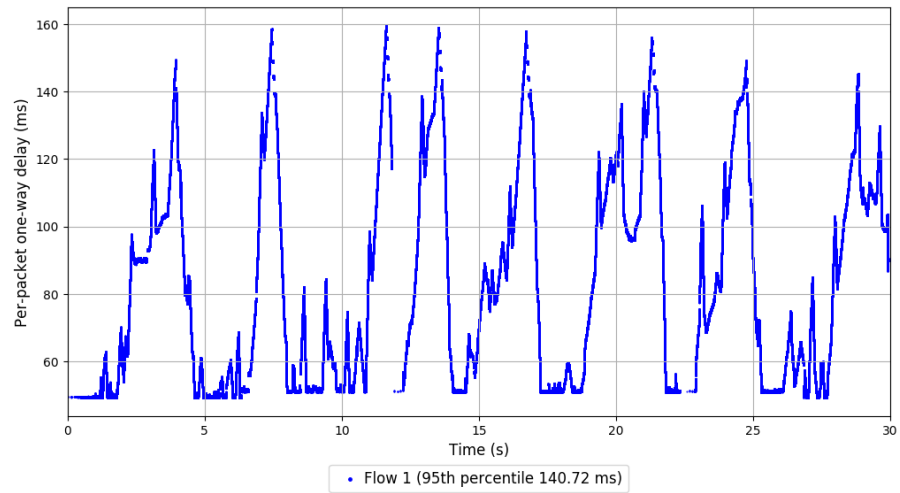
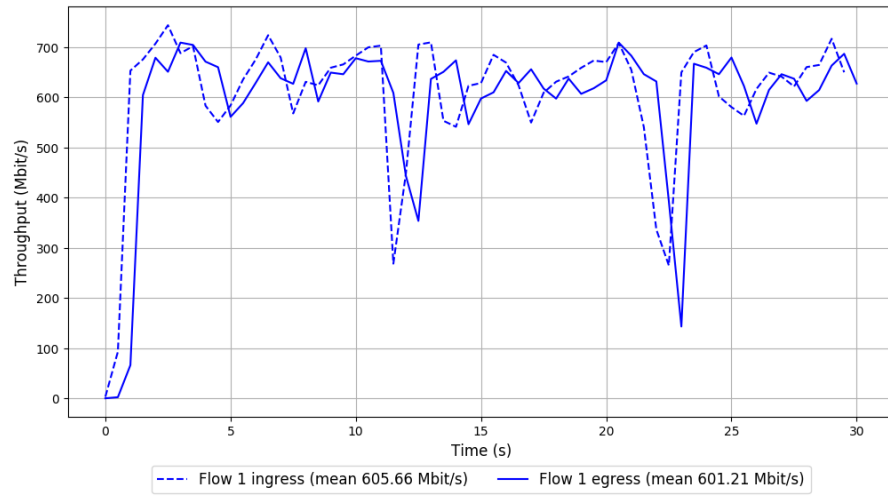
-- Flow 1:

Average throughput: 601.21 Mbit/s

95th percentile per-packet one-way delay: 140.722 ms

Loss rate: 1.07%

Run 2: Report of TCP BBR — Data Link

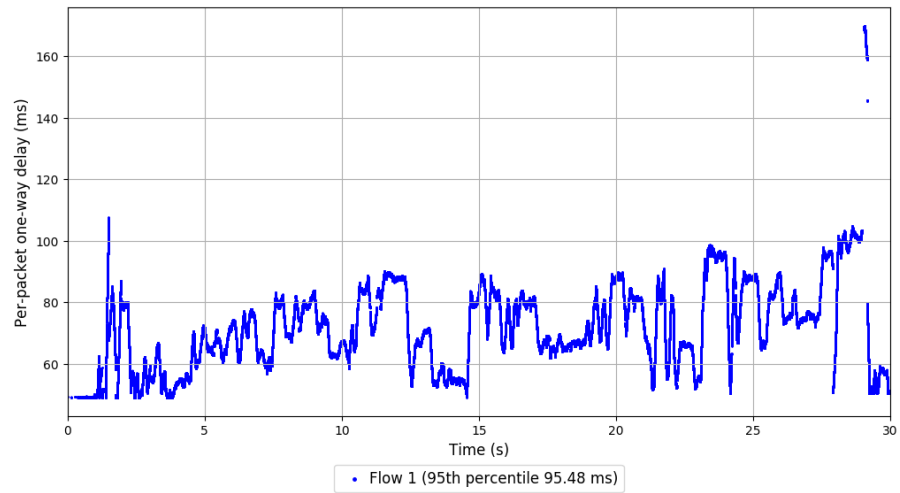
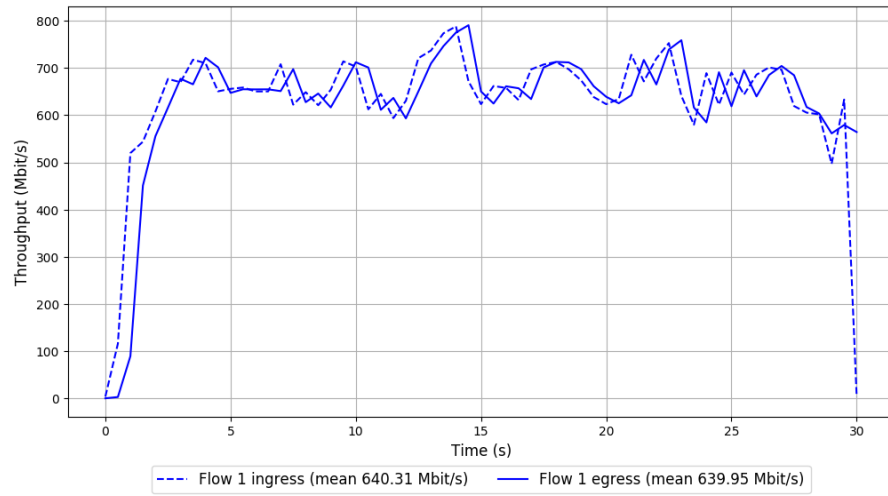


Run 1: Statistics of TCP Cubic

Start at: 2018-08-28 16:59:17
End at: 2018-08-28 16:59:47
Local clock offset: 0.429 ms
Remote clock offset: -0.023 ms

Below is generated by plot.py at 2018-08-28 17:21:11
Datalink statistics
-- Total of 1 flow:
Average throughput: 639.95 Mbit/s
95th percentile per-packet one-way delay: 95.482 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 639.95 Mbit/s
95th percentile per-packet one-way delay: 95.482 ms
Loss rate: 0.39%

Run 1: Report of TCP Cubic — Data Link

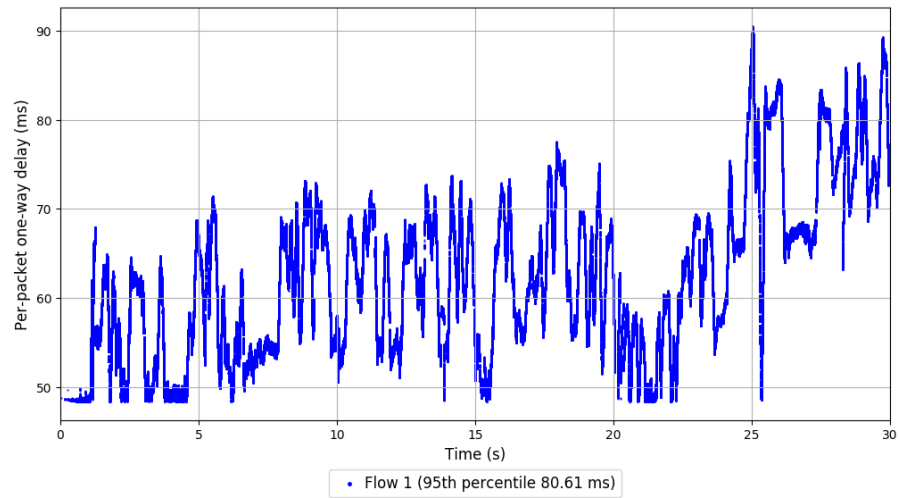
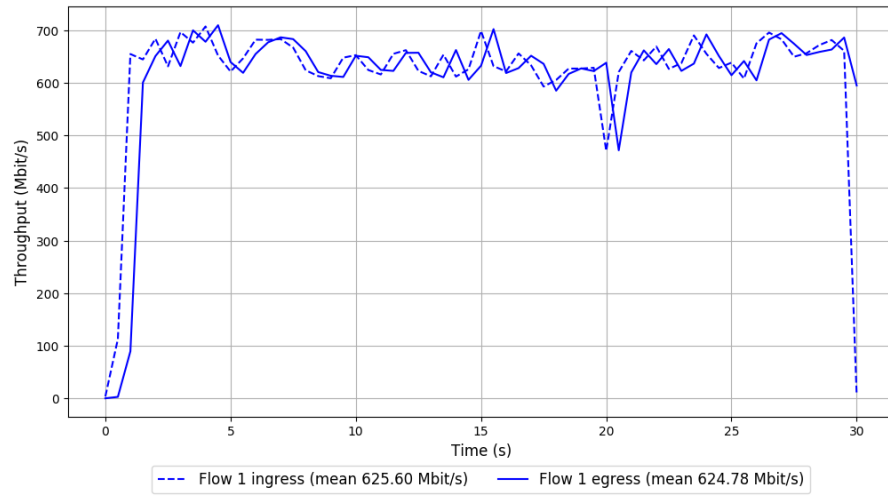


Run 2: Statistics of TCP Cubic

Start at: 2018-08-28 17:05:29
End at: 2018-08-28 17:05:59
Local clock offset: -0.239 ms
Remote clock offset: -0.125 ms

Below is generated by plot.py at 2018-08-28 17:21:11
Datalink statistics
-- Total of 1 flow:
Average throughput: 624.78 Mbit/s
95th percentile per-packet one-way delay: 80.607 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 624.78 Mbit/s
95th percentile per-packet one-way delay: 80.607 ms
Loss rate: 0.46%

Run 2: Report of TCP Cubic — Data Link



Run 1: Statistics of Indigo

Start at: 2018-08-28 17:00:52

End at: 2018-08-28 17:01:22

Local clock offset: -0.77 ms

Remote clock offset: -0.128 ms

Below is generated by plot.py at 2018-08-28 17:21:11

Datalink statistics

-- Total of 1 flow:

Average throughput: 211.92 Mbit/s

95th percentile per-packet one-way delay: 50.055 ms

Loss rate: 0.38%

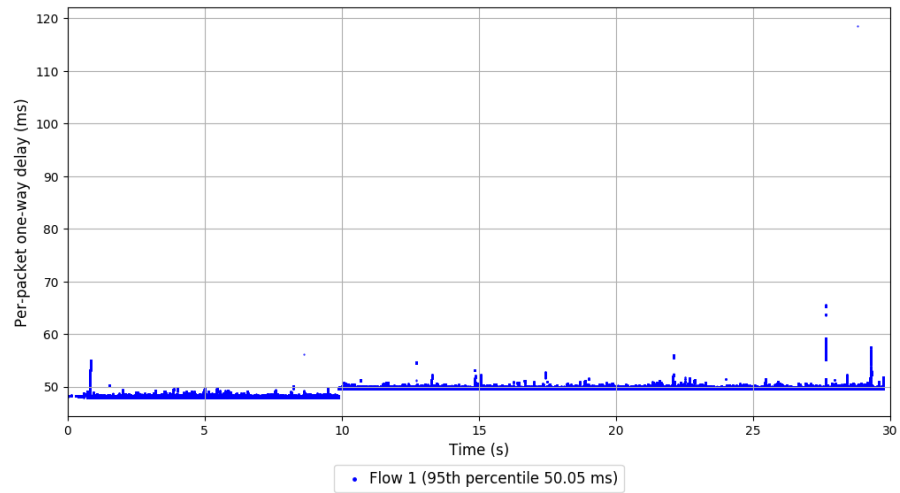
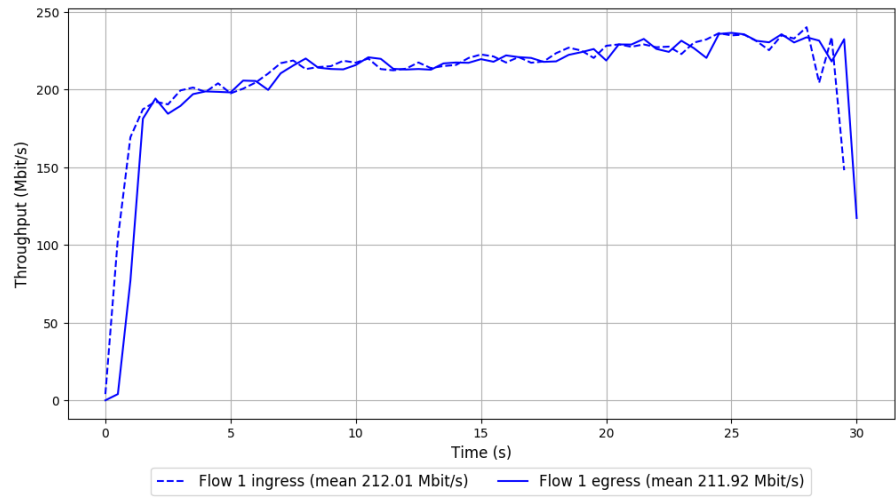
-- Flow 1:

Average throughput: 211.92 Mbit/s

95th percentile per-packet one-way delay: 50.055 ms

Loss rate: 0.38%

Run 1: Report of Indigo — Data Link

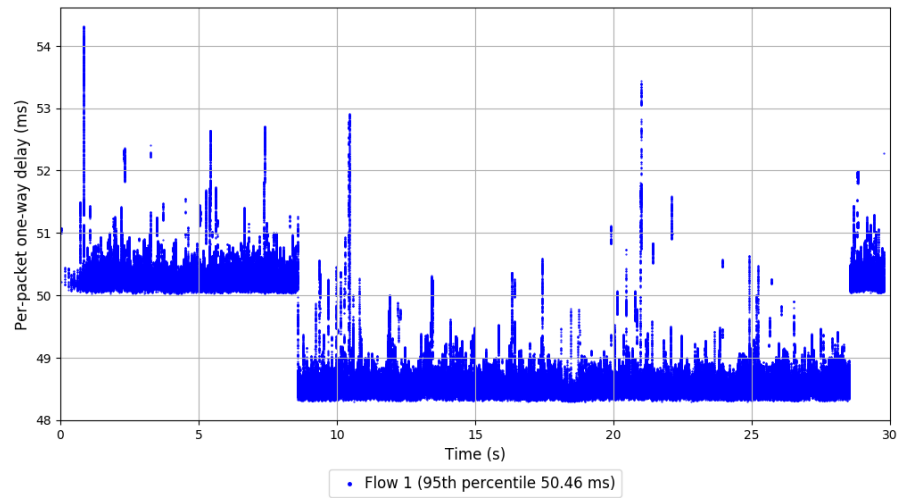
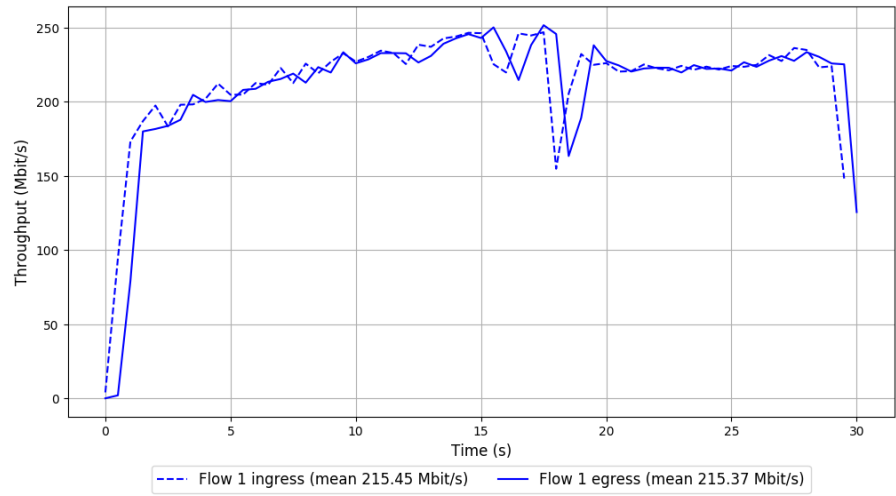


Run 2: Statistics of Indigo

Start at: 2018-08-28 17:07:03
End at: 2018-08-28 17:07:33
Local clock offset: -0.308 ms
Remote clock offset: -0.087 ms

Below is generated by plot.py at 2018-08-28 17:21:11
Datalink statistics
-- Total of 1 flow:
Average throughput: 215.37 Mbit/s
95th percentile per-packet one-way delay: 50.457 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 215.37 Mbit/s
95th percentile per-packet one-way delay: 50.457 ms
Loss rate: 0.36%

Run 2: Report of Indigo — Data Link

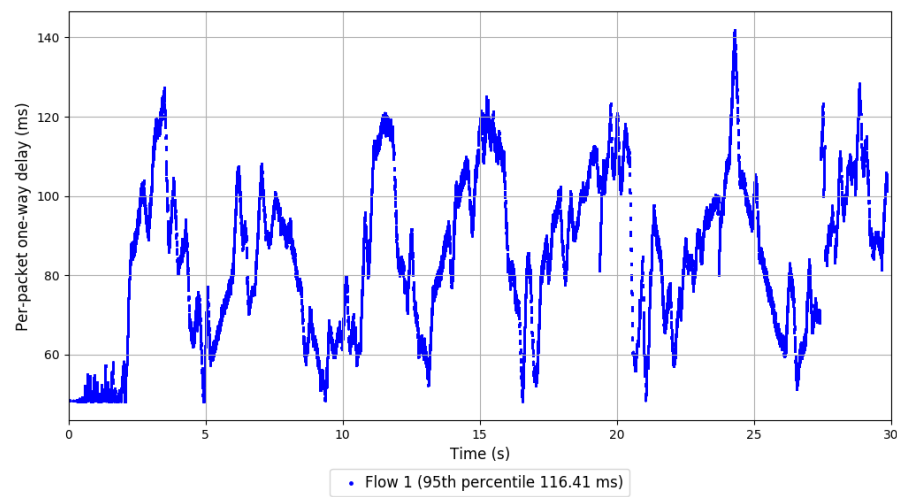
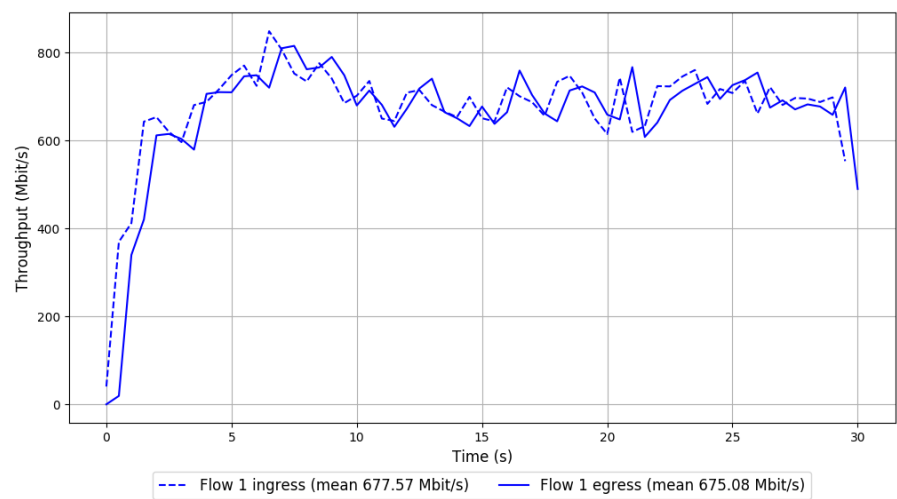


Run 1: Statistics of Muses-23

Start at: 2018-08-28 17:02:16
End at: 2018-08-28 17:02:46
Local clock offset: -0.598 ms
Remote clock offset: -0.115 ms

Below is generated by plot.py at 2018-08-28 17:22:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 675.08 Mbit/s
95th percentile per-packet one-way delay: 116.406 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 675.08 Mbit/s
95th percentile per-packet one-way delay: 116.406 ms
Loss rate: 0.70%

Run 1: Report of Muses-23 — Data Link



Run 2: Statistics of Muses-23

Start at: 2018-08-28 17:08:27
End at: 2018-08-28 17:08:57
Local clock offset: -0.448 ms
Remote clock offset: -0.187 ms

Below is generated by plot.py at 2018-08-28 17:22:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 671.43 Mbit/s
95th percentile per-packet one-way delay: 115.287 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 671.43 Mbit/s
95th percentile per-packet one-way delay: 115.287 ms
Loss rate: 0.59%

Run 2: Report of Muses-23 — Data Link

