

Pantheon Report

Generated at 2018-08-28 15:24:24 (UTC).

Data path: GCE London 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.

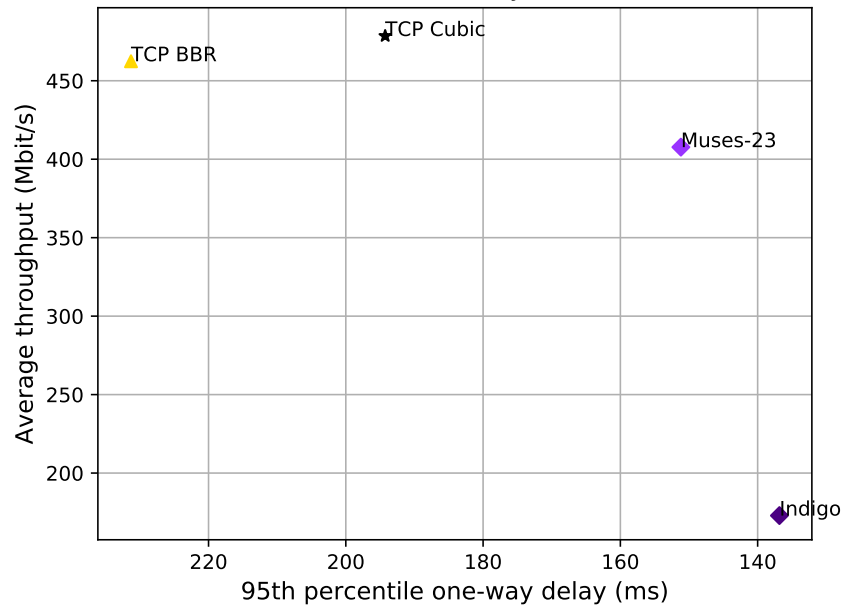
System info:

```
Linux 4.15.0-1015-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
```

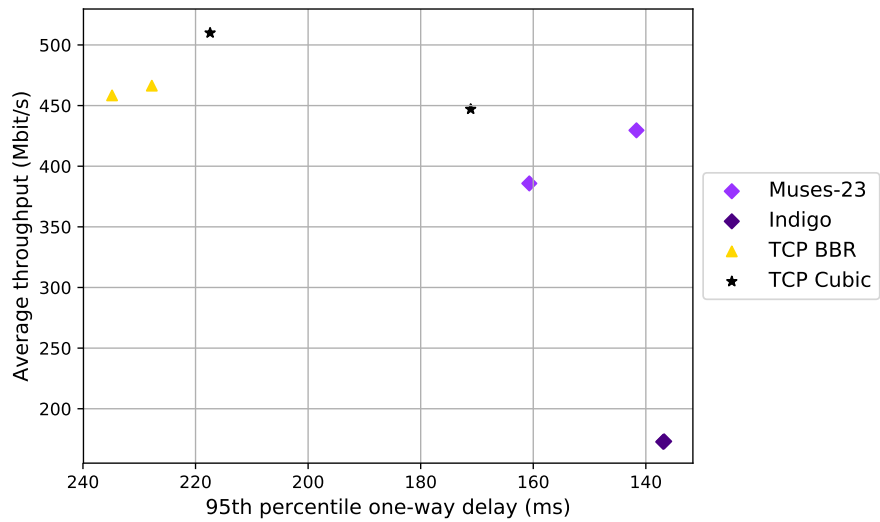
Git summary:

```
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 @ cbfce6db5ff5740dafe1771f813cd646339e1952
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 London to GCE Sydney, 2 runs of 30s each per scheme
(mean of all runs by scheme)



test from GCE London 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	462.42	231.30	2.64
TCP Cubic	2	478.51	194.27	1.35
Indigo	2	172.91	136.83	0.81
Muses-23	2	407.69	151.18	1.05

Run 1: Statistics of TCP BBR

Start at: 2018-08-28 15:05:00

End at: 2018-08-28 15:05:30

Local clock offset: 0.038 ms

Remote clock offset: 0.256 ms

Below is generated by plot.py at 2018-08-28 15:24:10

Datalink statistics

-- Total of 1 flow:

Average throughput: 466.43 Mbit/s

95th percentile per-packet one-way delay: 227.766 ms

Loss rate: 2.28%

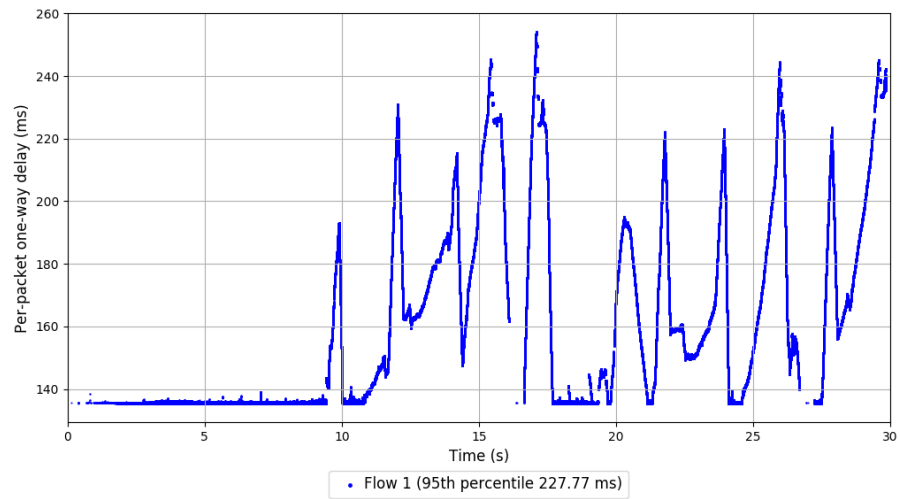
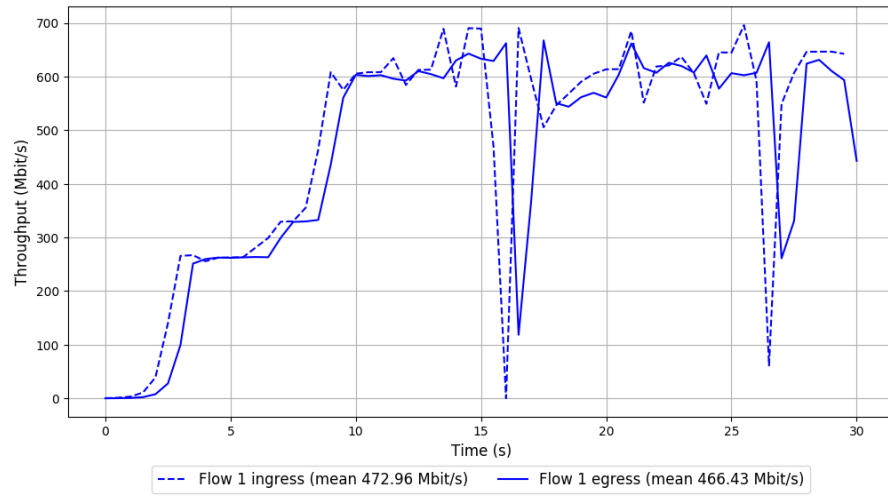
-- Flow 1:

Average throughput: 466.43 Mbit/s

95th percentile per-packet one-way delay: 227.766 ms

Loss rate: 2.28%

Run 1: Report of TCP BBR — Data Link

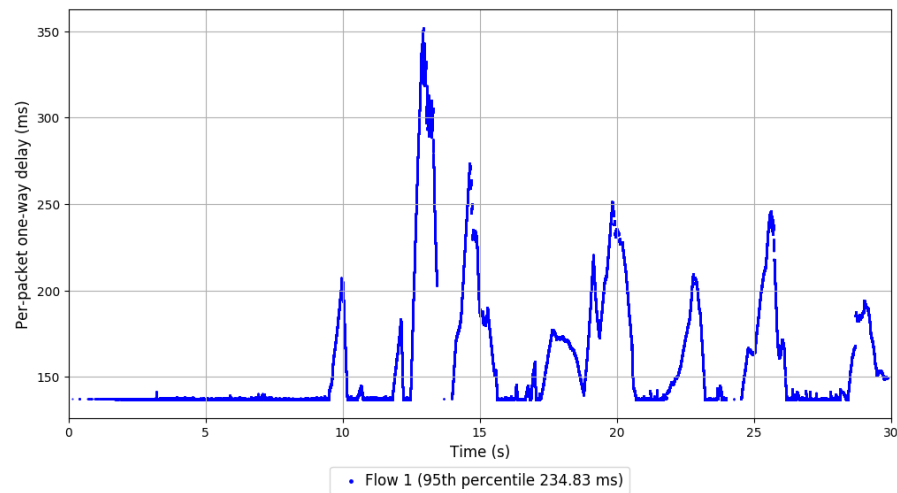
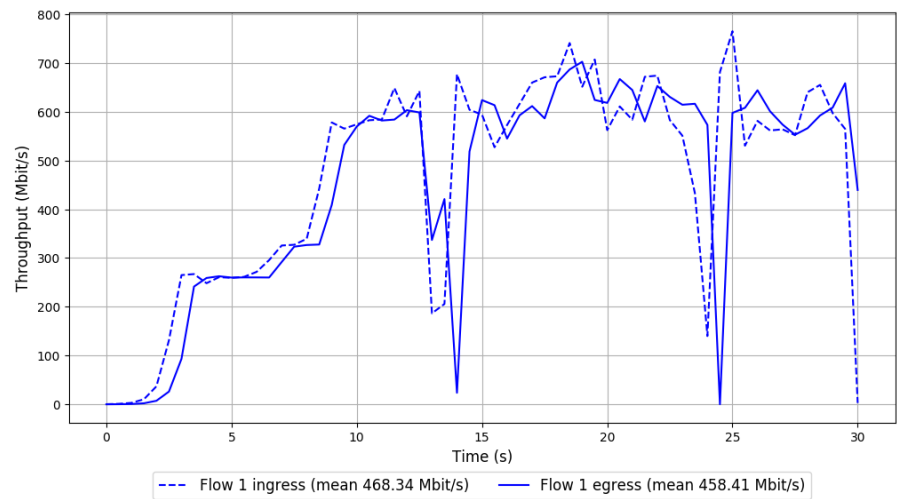


Run 2: Statistics of TCP BBR

Start at: 2018-08-28 15:11:15
End at: 2018-08-28 15:11:45
Local clock offset: 0.014 ms
Remote clock offset: -0.545 ms

Below is generated by plot.py at 2018-08-28 15:24:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 458.41 Mbit/s
95th percentile per-packet one-way delay: 234.830 ms
Loss rate: 3.01%
-- Flow 1:
Average throughput: 458.41 Mbit/s
95th percentile per-packet one-way delay: 234.830 ms
Loss rate: 3.01%

Run 2: Report of TCP BBR — Data Link

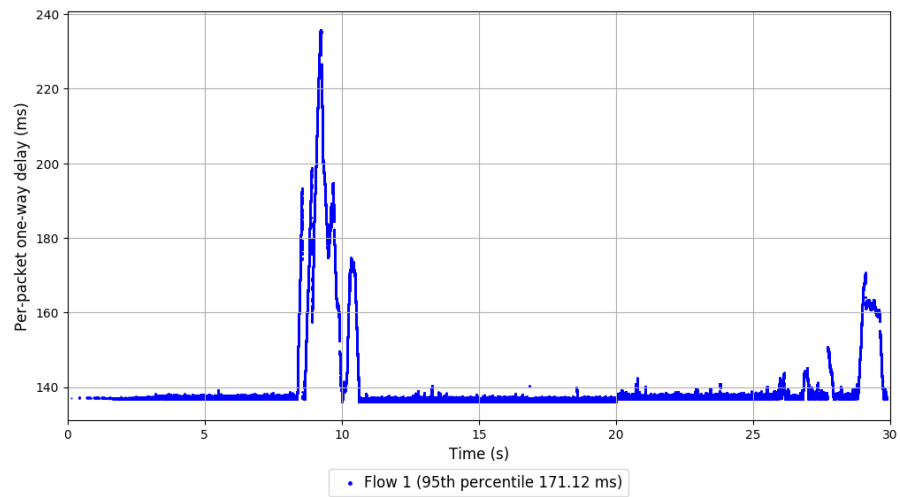
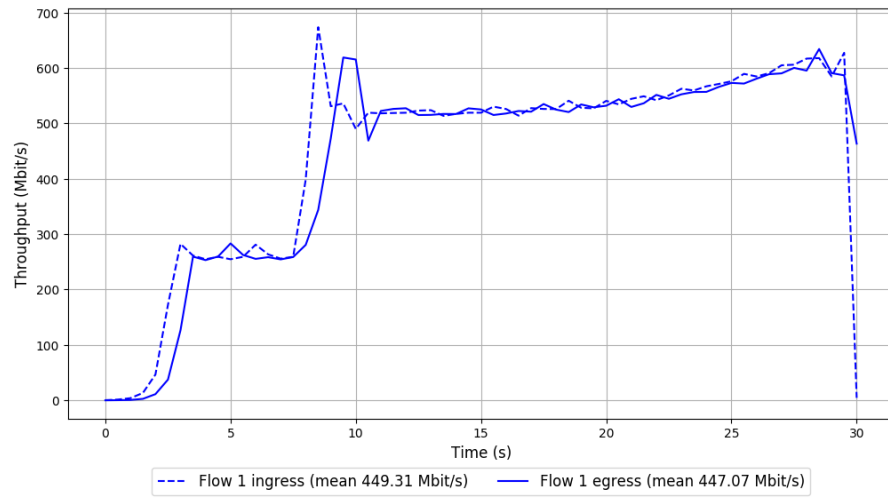


Run 1: Statistics of TCP Cubic

Start at: 2018-08-28 15:03:26
End at: 2018-08-28 15:03:56
Local clock offset: 0.017 ms
Remote clock offset: -0.536 ms

Below is generated by plot.py at 2018-08-28 15:24:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 447.07 Mbit/s
95th percentile per-packet one-way delay: 171.121 ms
Loss rate: 1.40%
-- Flow 1:
Average throughput: 447.07 Mbit/s
95th percentile per-packet one-way delay: 171.121 ms
Loss rate: 1.40%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-08-28 15:09:37

End at: 2018-08-28 15:10:07

Local clock offset: 0.005 ms

Remote clock offset: 0.226 ms

Below is generated by plot.py at 2018-08-28 15:24:17

Datalink statistics

-- Total of 1 flow:

Average throughput: 509.96 Mbit/s

95th percentile per-packet one-way delay: 217.411 ms

Loss rate: 1.31%

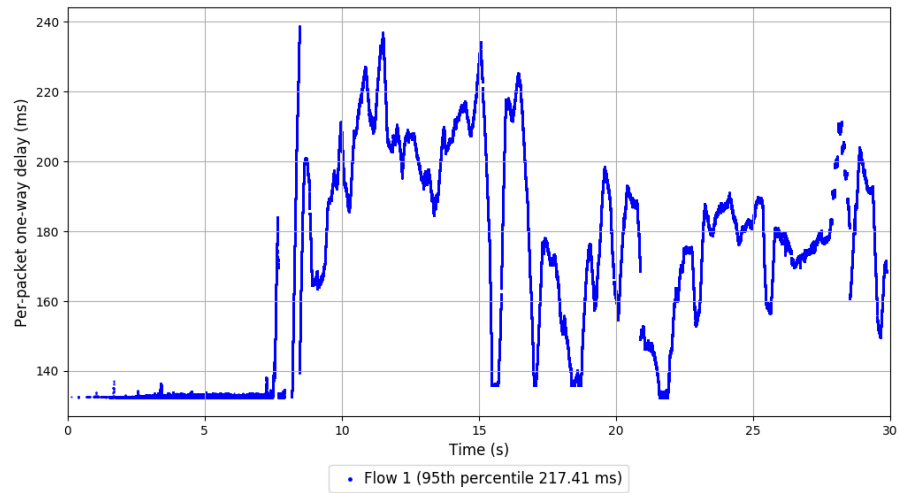
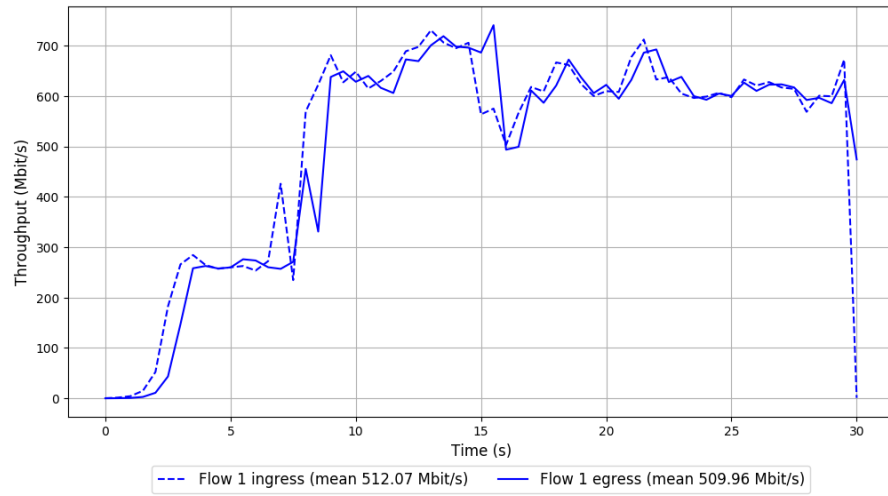
-- Flow 1:

Average throughput: 509.96 Mbit/s

95th percentile per-packet one-way delay: 217.411 ms

Loss rate: 1.31%

Run 2: Report of TCP Cubic — Data Link



Run 1: Statistics of Indigo

Start at: 2018-08-28 15:08:10

End at: 2018-08-28 15:08:40

Local clock offset: 0.159 ms

Remote clock offset: -0.39 ms

Below is generated by plot.py at 2018-08-28 15:24:17

Datalink statistics

-- Total of 1 flow:

Average throughput: 172.72 Mbit/s

95th percentile per-packet one-way delay: 136.914 ms

Loss rate: 0.82%

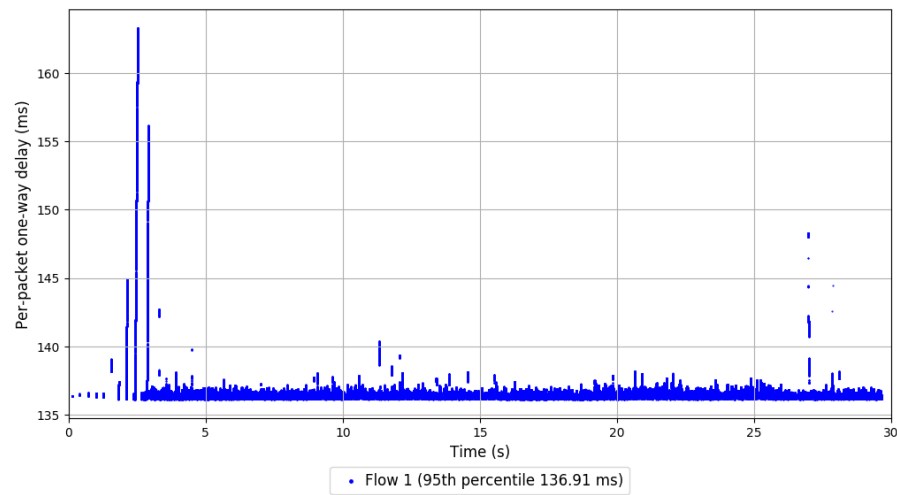
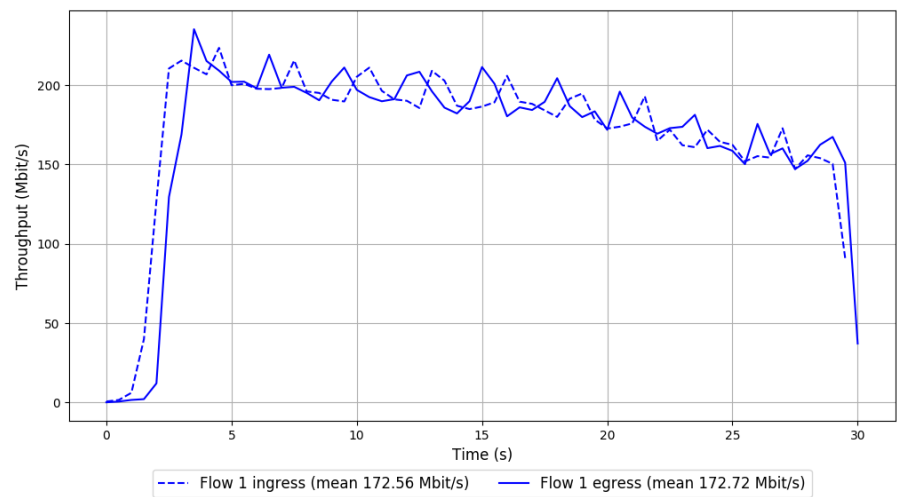
-- Flow 1:

Average throughput: 172.72 Mbit/s

95th percentile per-packet one-way delay: 136.914 ms

Loss rate: 0.82%

Run 1: Report of Indigo — Data Link

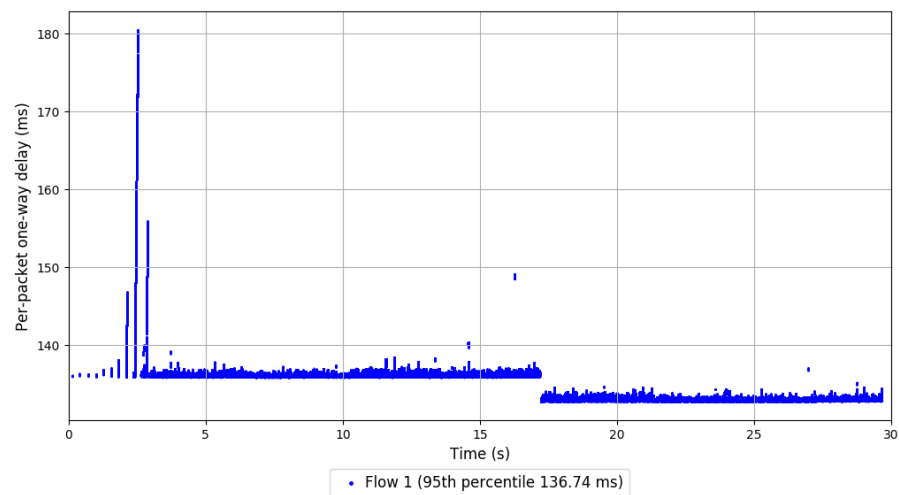
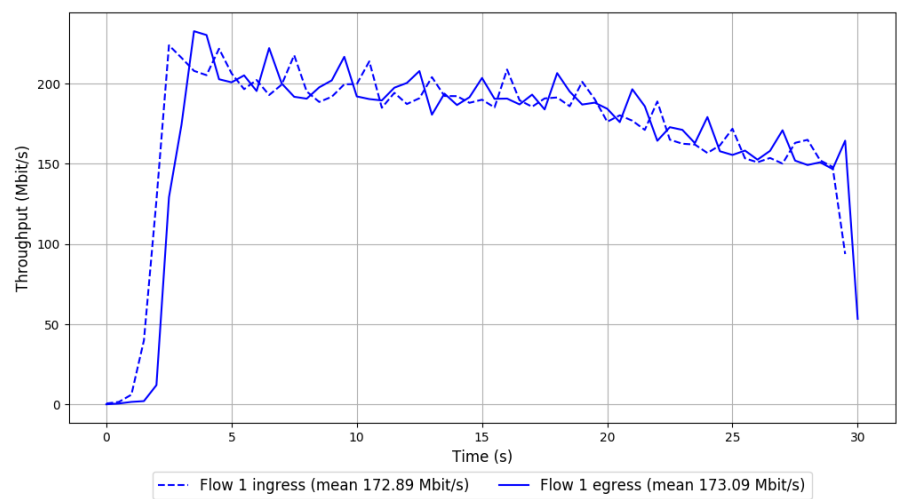


Run 2: Statistics of Indigo

Start at: 2018-08-28 15:14:29
End at: 2018-08-28 15:14:59
Local clock offset: 0.025 ms
Remote clock offset: -0.215 ms

Below is generated by plot.py at 2018-08-28 15:24:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 173.09 Mbit/s
95th percentile per-packet one-way delay: 136.741 ms
Loss rate: 0.81%
-- Flow 1:
Average throughput: 173.09 Mbit/s
95th percentile per-packet one-way delay: 136.741 ms
Loss rate: 0.81%

Run 2: Report of Indigo — Data Link



Run 1: Statistics of Muses-23

Start at: 2018-08-28 15:06:38

End at: 2018-08-28 15:07:08

Local clock offset: 0.142 ms

Remote clock offset: -0.131 ms

Below is generated by plot.py at 2018-08-28 15:24:20

Datalink statistics

-- Total of 1 flow:

Average throughput: 385.81 Mbit/s

95th percentile per-packet one-way delay: 160.700 ms

Loss rate: 1.23%

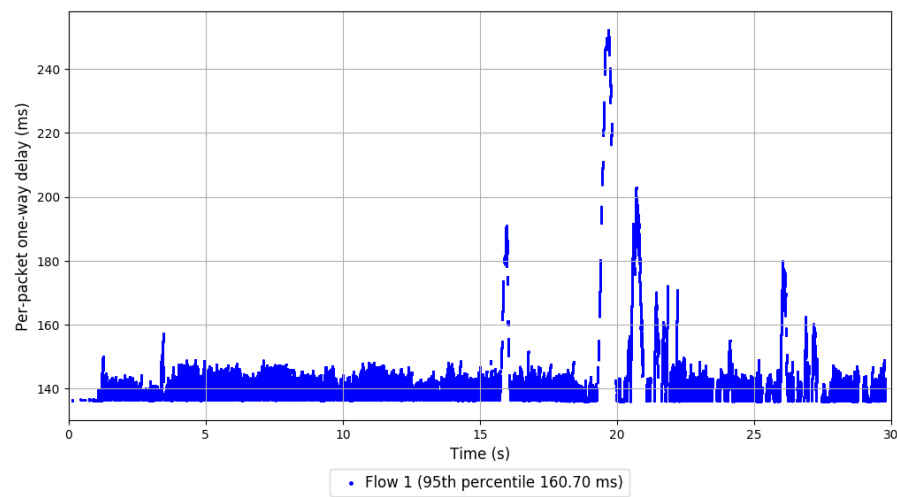
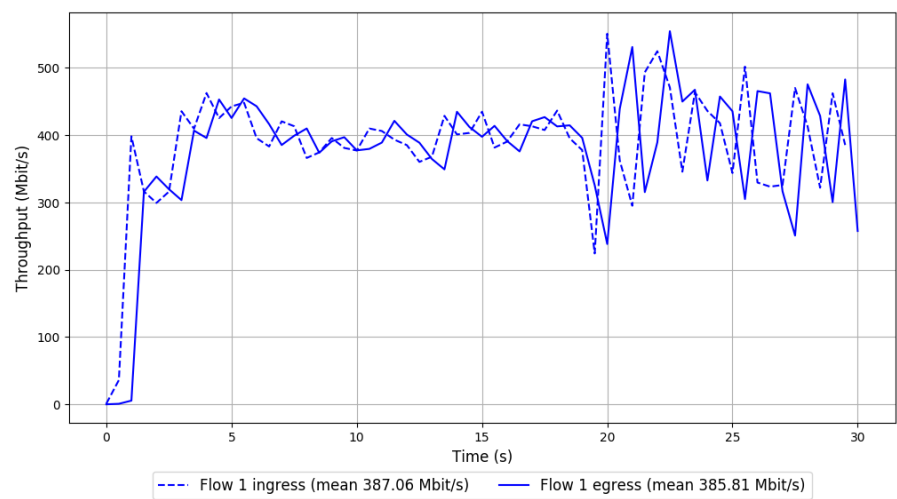
-- Flow 1:

Average throughput: 385.81 Mbit/s

95th percentile per-packet one-way delay: 160.700 ms

Loss rate: 1.23%

Run 1: Report of Muses-23 — Data Link



Run 2: Statistics of Muses-23

Start at: 2018-08-28 15:12:54

End at: 2018-08-28 15:13:24

Local clock offset: 0.144 ms

Remote clock offset: 0.389 ms

Below is generated by plot.py at 2018-08-28 15:24:23

Datalink statistics

-- Total of 1 flow:

Average throughput: 429.58 Mbit/s

95th percentile per-packet one-way delay: 141.665 ms

Loss rate: 0.88%

-- Flow 1:

Average throughput: 429.58 Mbit/s

95th percentile per-packet one-way delay: 141.665 ms

Loss rate: 0.88%

Run 2: Report of Muses-23 — Data Link

