

Pantheon Report

Generated at 2018-09-03 08:44:42 (UTC).

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

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.

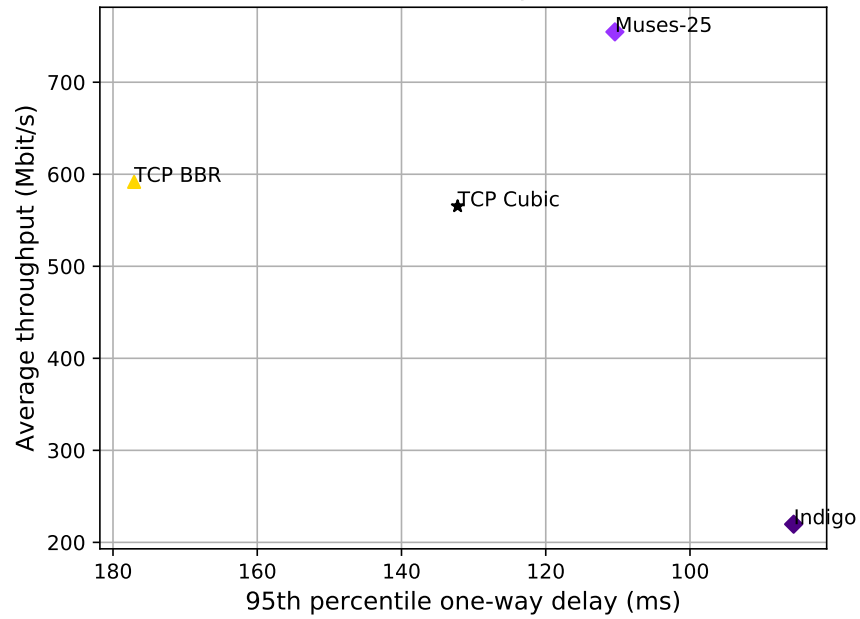
System info:

```
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
```

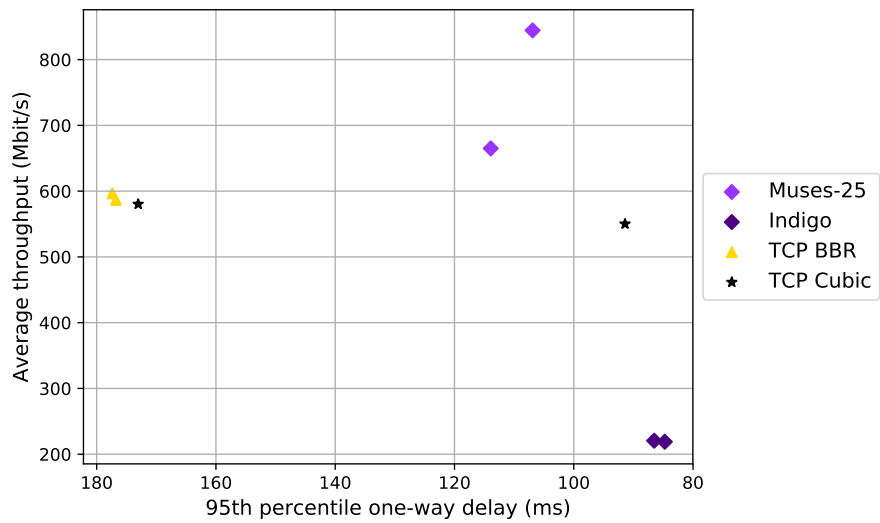
Git summary:

```
branch: muses @ f309f5459e2c5237279a184e52ece7a2b47ef1c9
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
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 Sydney to GCE Iowa, 2 runs of 30s each per scheme
(mean of all runs by scheme)



test from GCE Sydney to GCE Iowa, 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	591.69	177.07	1.18
TCP Cubic	2	565.22	132.22	0.05
Indigo	2	219.73	85.63	0.00
Muses-25	2	754.70	110.41	0.03

Run 1: Statistics of TCP BBR

Start at: 2018-09-03 08:22:26

End at: 2018-09-03 08:22:56

Local clock offset: 2.177 ms

Remote clock offset: 30.193 ms

Below is generated by plot.py at 2018-09-03 08:44:06

Datalink statistics

-- Total of 1 flow:

Average throughput: 596.67 Mbit/s

95th percentile per-packet one-way delay: 177.375 ms

Loss rate: 1.52%

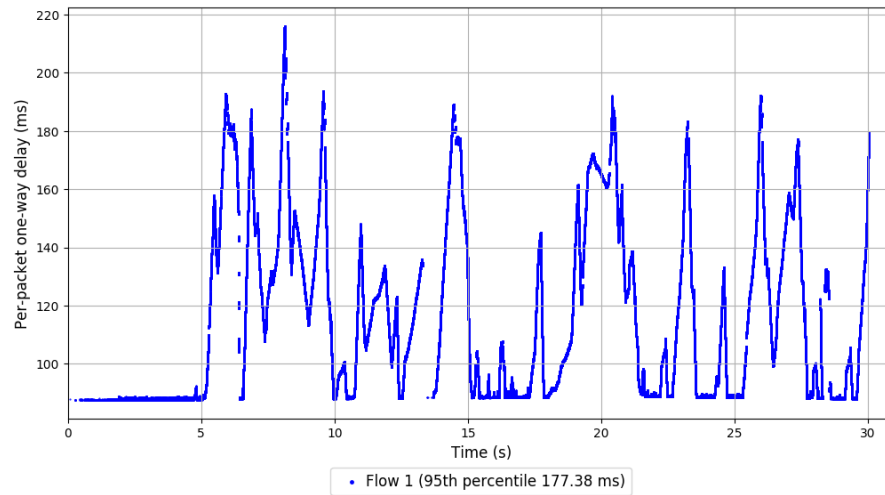
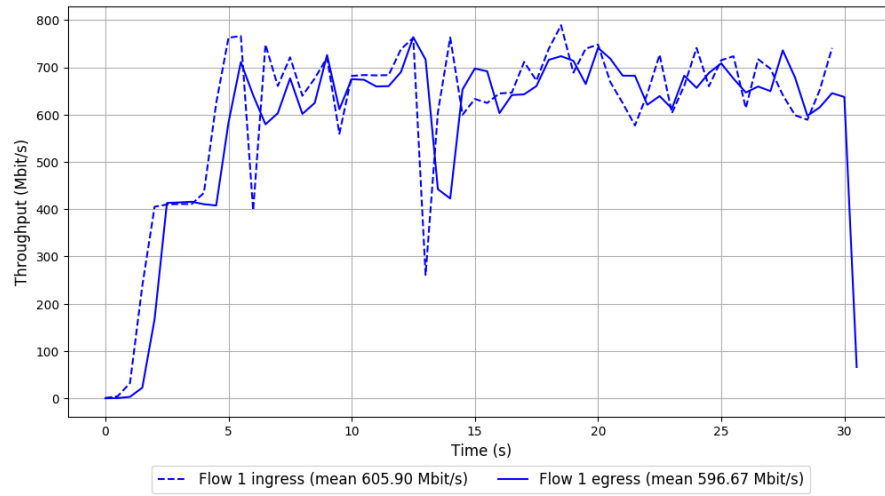
-- Flow 1:

Average throughput: 596.67 Mbit/s

95th percentile per-packet one-way delay: 177.375 ms

Loss rate: 1.52%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-09-03 08:28:42

End at: 2018-09-03 08:29:12

Local clock offset: 9.448 ms

Remote clock offset: 37.152 ms

Below is generated by plot.py at 2018-09-03 08:44:06

Datalink statistics

-- Total of 1 flow:

Average throughput: 586.72 Mbit/s

95th percentile per-packet one-way delay: 176.770 ms

Loss rate: 0.84%

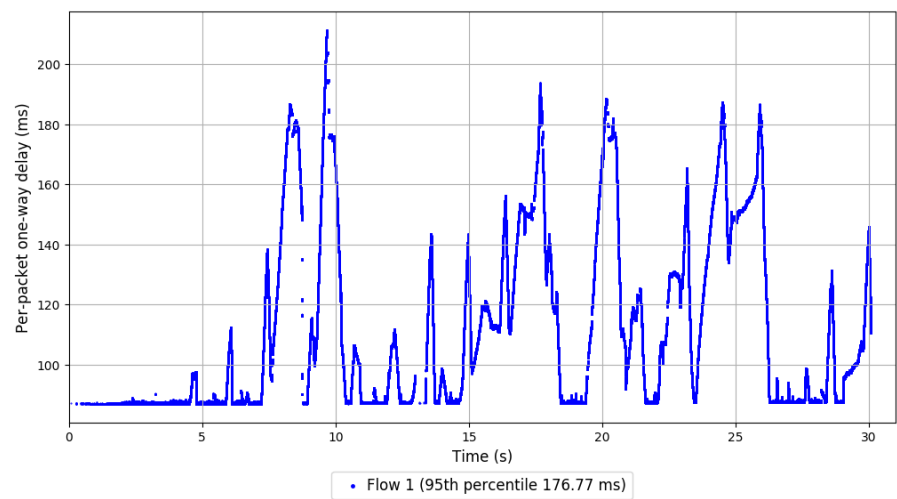
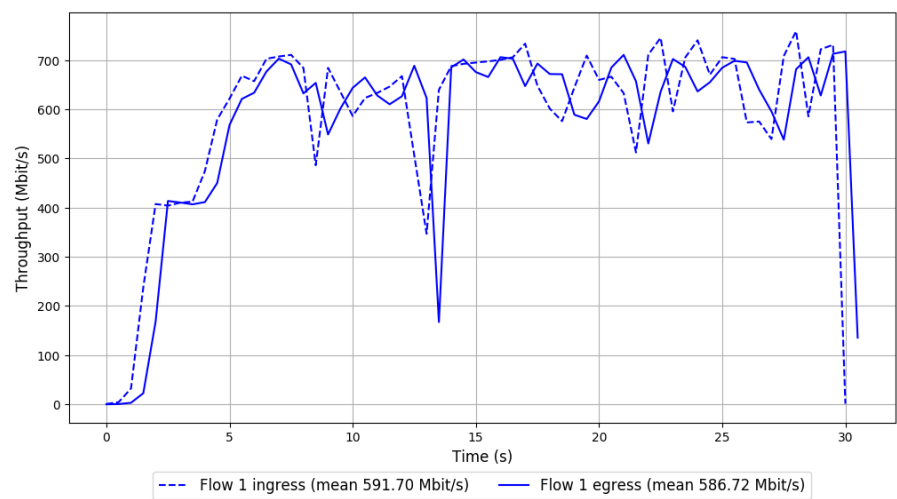
-- Flow 1:

Average throughput: 586.72 Mbit/s

95th percentile per-packet one-way delay: 176.770 ms

Loss rate: 0.84%

Run 2: Report of TCP BBR — Data Link

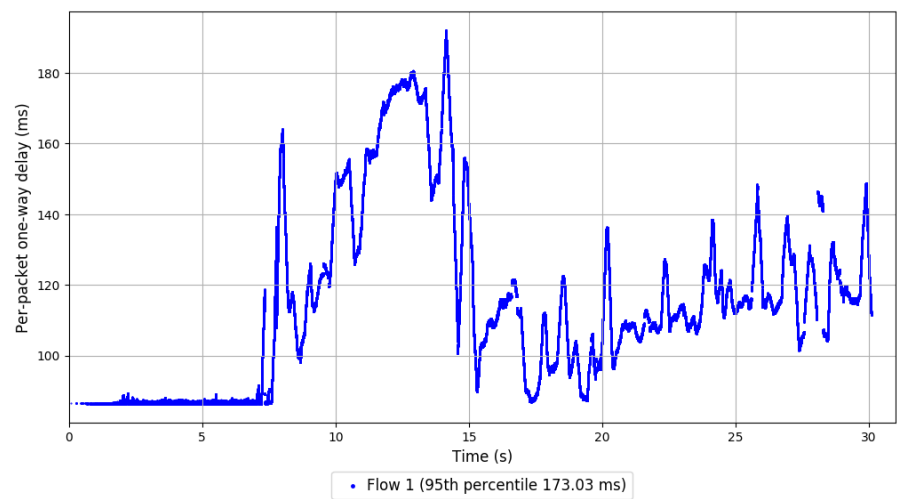
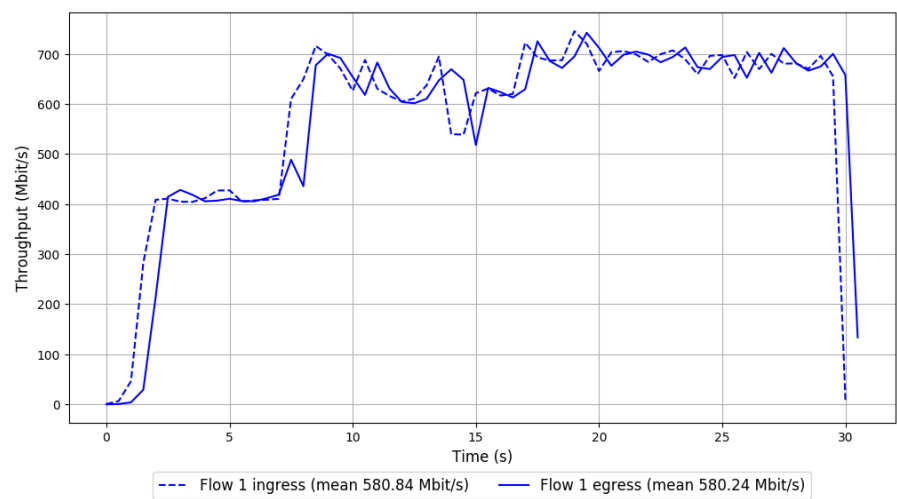


Run 1: Statistics of TCP Cubic

Start at: 2018-09-03 08:27:06
End at: 2018-09-03 08:27:36
Local clock offset: 6.134 ms
Remote clock offset: 35.129 ms

Below is generated by plot.py at 2018-09-03 08:44:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 580.24 Mbit/s
95th percentile per-packet one-way delay: 173.034 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 580.24 Mbit/s
95th percentile per-packet one-way delay: 173.034 ms
Loss rate: 0.10%

Run 1: Report of TCP Cubic — Data Link

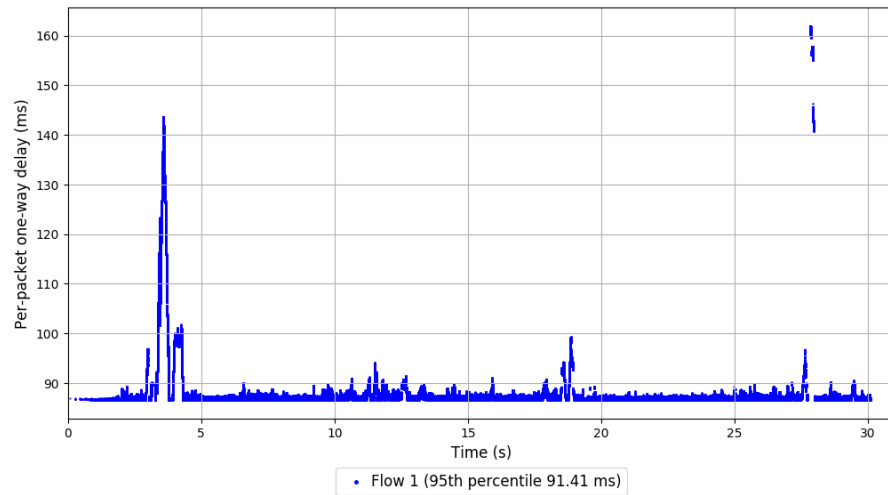
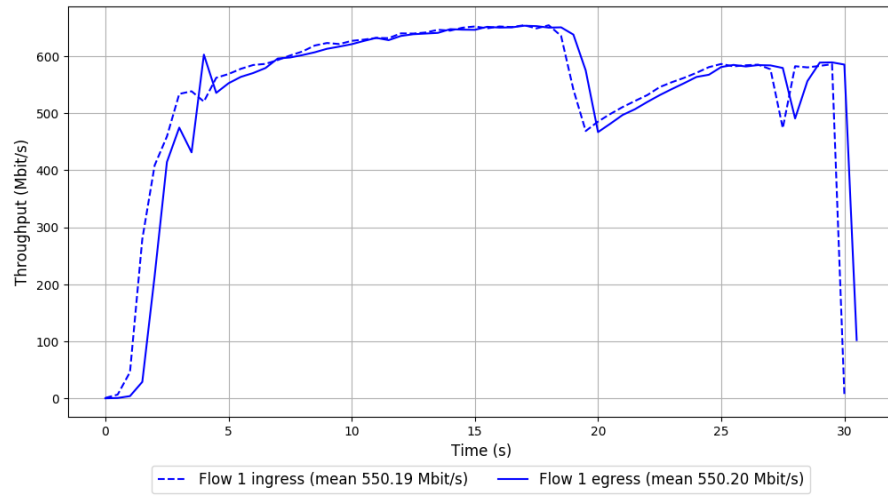


Run 2: Statistics of TCP Cubic

Start at: 2018-09-03 08:33:29
End at: 2018-09-03 08:33:59
Local clock offset: 9.452 ms
Remote clock offset: 42.753 ms

Below is generated by plot.py at 2018-09-03 08:44:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 550.20 Mbit/s
95th percentile per-packet one-way delay: 91.406 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 550.20 Mbit/s
95th percentile per-packet one-way delay: 91.406 ms
Loss rate: 0.00%

Run 2: Report of TCP Cubic — Data Link



Run 1: Statistics of Indigo

Start at: 2018-09-03 08:25:39

End at: 2018-09-03 08:26:09

Local clock offset: 6.743 ms

Remote clock offset: 33.513 ms

Below is generated by plot.py at 2018-09-03 08:44:06

Datalink statistics

-- Total of 1 flow:

Average throughput: 218.94 Mbit/s

95th percentile per-packet one-way delay: 84.737 ms

Loss rate: 0.00%

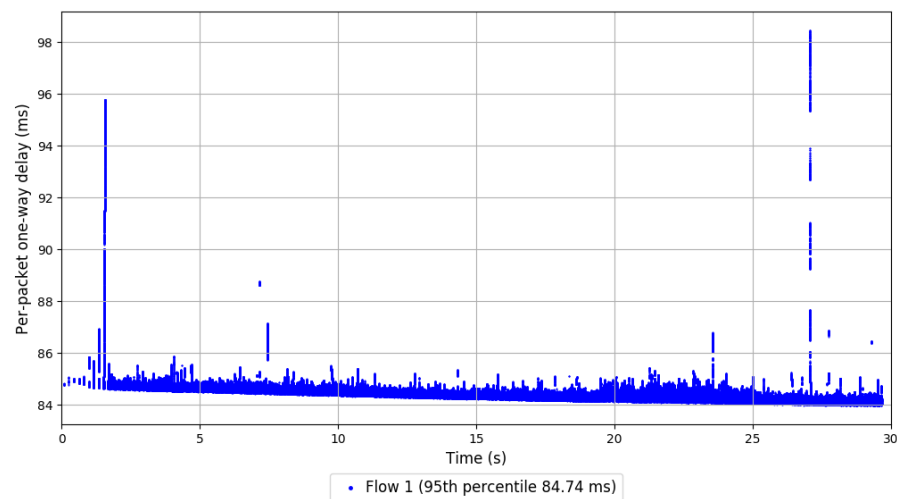
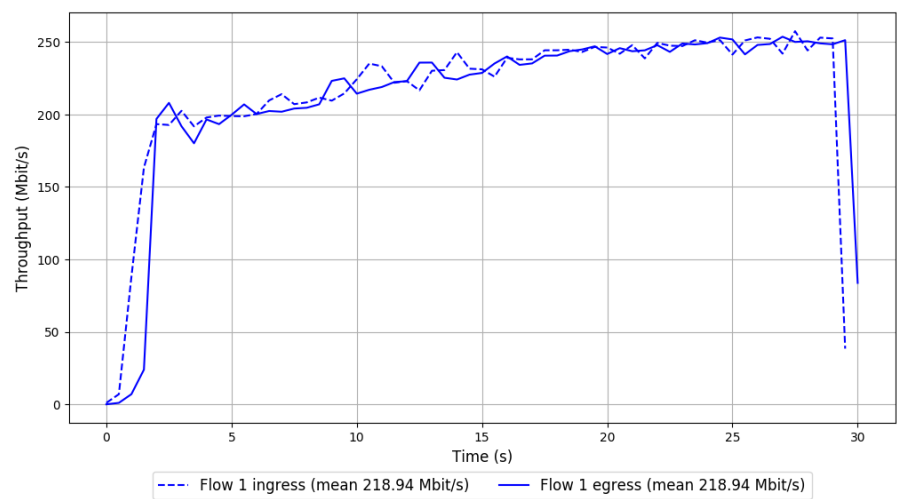
-- Flow 1:

Average throughput: 218.94 Mbit/s

95th percentile per-packet one-way delay: 84.737 ms

Loss rate: 0.00%

Run 1: Report of Indigo — Data Link

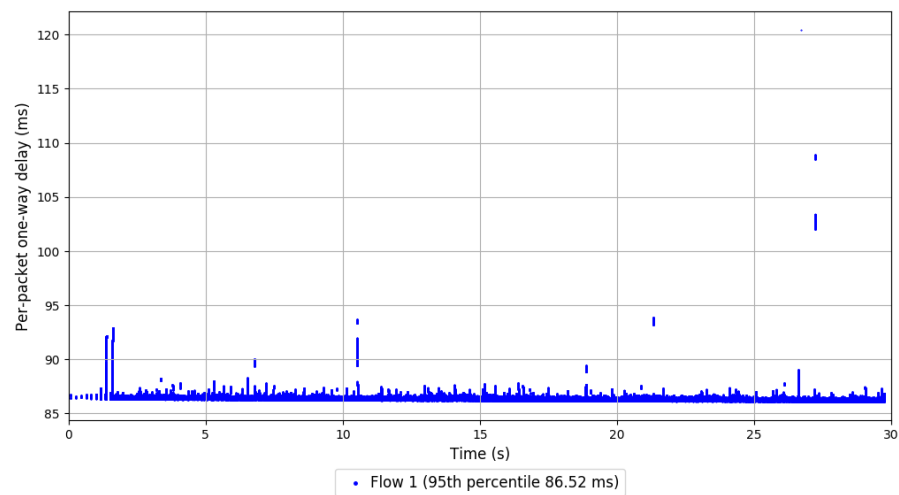
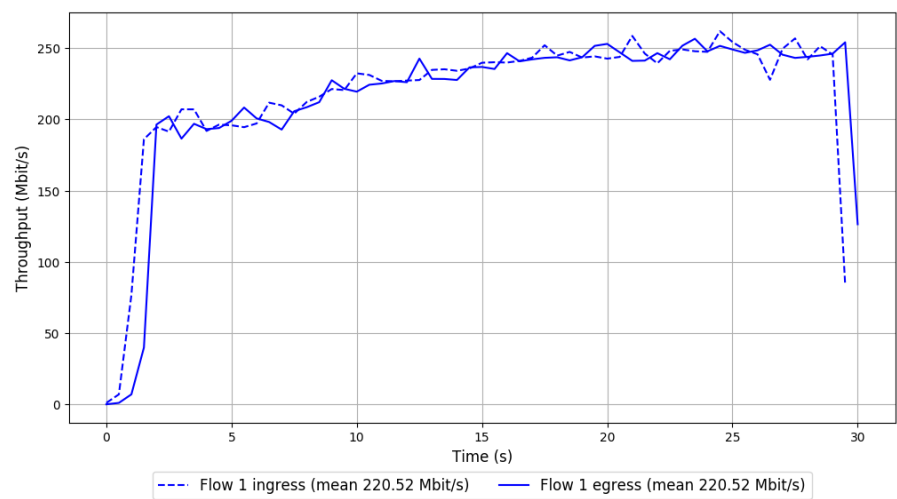


Run 2: Statistics of Indigo

Start at: 2018-09-03 08:32:02
End at: 2018-09-03 08:32:32
Local clock offset: 8.432 ms
Remote clock offset: 41.134 ms

Below is generated by plot.py at 2018-09-03 08:44:06
Datalink statistics
-- Total of 1 flow:
Average throughput: 220.52 Mbit/s
95th percentile per-packet one-way delay: 86.523 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 220.52 Mbit/s
95th percentile per-packet one-way delay: 86.523 ms
Loss rate: 0.00%

Run 2: Report of Indigo — Data Link

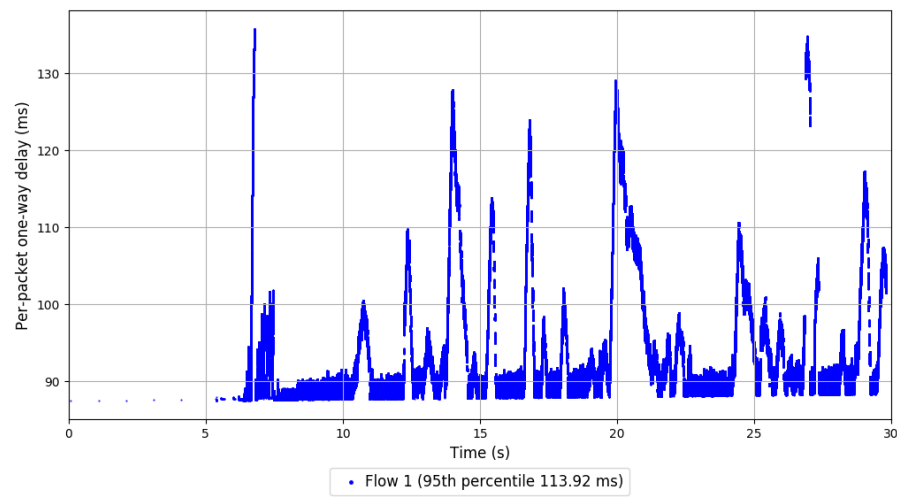
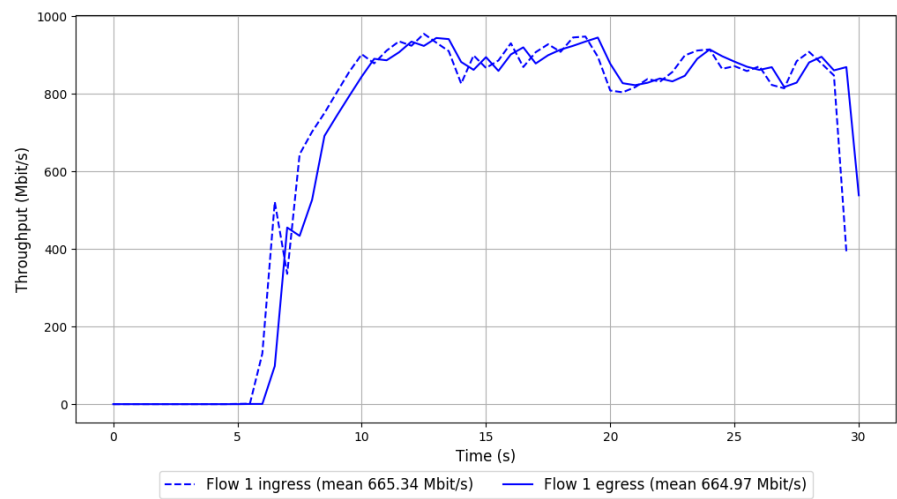


Run 1: Statistics of Muses-25

Start at: 2018-09-03 08:24:05
End at: 2018-09-03 08:24:35
Local clock offset: 3.817 ms
Remote clock offset: 31.918 ms

Below is generated by plot.py at 2018-09-03 08:44:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 664.97 Mbit/s
95th percentile per-packet one-way delay: 113.919 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 664.97 Mbit/s
95th percentile per-packet one-way delay: 113.919 ms
Loss rate: 0.05%

Run 1: Report of Muses-25 — Data Link



Run 2: Statistics of Muses-25

Start at: 2018-09-03 08:30:21
End at: 2018-09-03 08:30:51
Local clock offset: 9.852 ms
Remote clock offset: 38.888 ms

Below is generated by plot.py at 2018-09-03 08:44:41
Datalink statistics
-- Total of 1 flow:
Average throughput: 844.43 Mbit/s
95th percentile per-packet one-way delay: 106.903 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 844.43 Mbit/s
95th percentile per-packet one-way delay: 106.903 ms
Loss rate: 0.00%

Run 2: Report of Muses-25 — Data Link

