

Pantheon Report

Generated at 2019-01-17 06:59:14 (UTC).

Tested in mahimahi: mm-delay 10 mm-link 60Mbps.trace 60Mbps.trace
--uplink-queue=droptail --uplink-queue-args=packets=1 --downlink-queue=droptail
--downlink-queue-args=packets=1

Repeated the test of 21 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

System info:

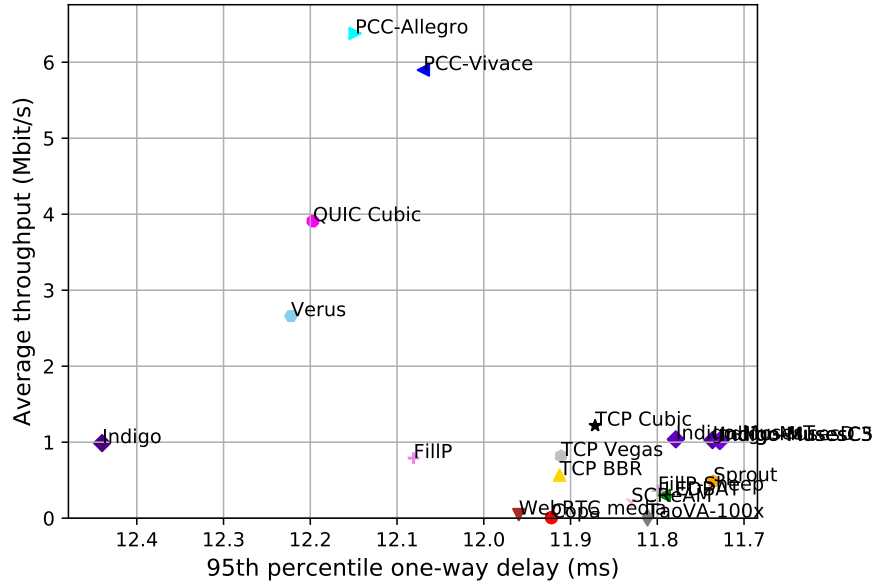
Linux 4.15.0-1026-gcp
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:

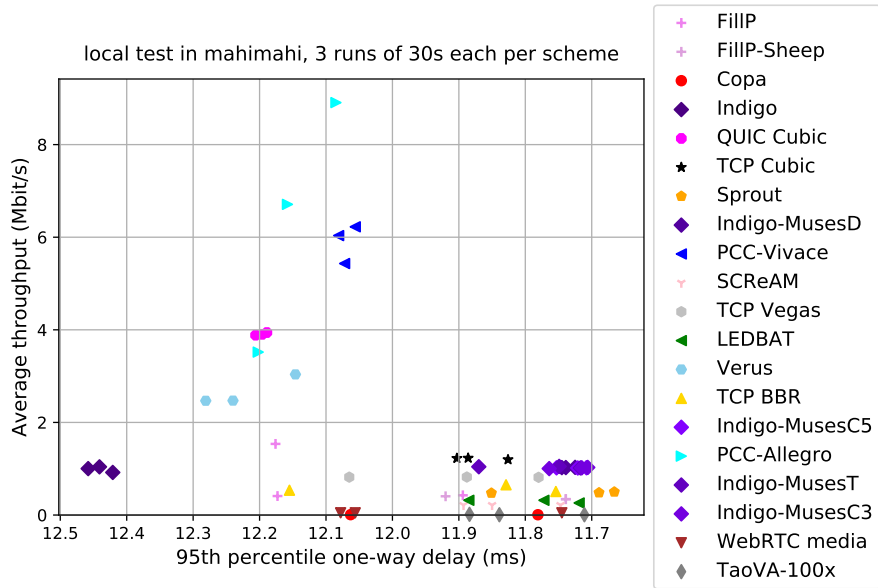
branch: muses @ c80a283586bf7b0cc1fe08c69c8f60d56498f81c
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ c3eee875824760ec5b2fd207fefe166e1afe2170
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
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-quick @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
M src/examples/cellsim.cc
M src/examples/sproutbt2.cc
M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
M src/verus.hpp
M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4

third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851

local test in mahimahi, 3 runs of 30s each per scheme
(mean of all runs by scheme)



local test in mahimahi, 3 runs of 30s each per scheme



scheme	# runs	mean avg tput (Mbit/s)	mean 95th-%ile delay (ms)	mean loss rate (%)
		flow 1	flow 1	flow 1
TCP BBR	3	0.57	11.91	29.08
Copa	2	0.01	11.92	89.09
TCP Cubic	3	1.22	11.87	8.77
FillP	3	0.79	12.08	50.45
FillP-Sheep	3	0.36	11.80	34.33
Indigo	3	0.99	12.44	95.64
Indigo-MusesC3	3	1.02	11.73	16.97
Indigo-MusesC5	3	1.02	11.73	13.70
Indigo-MusesD	3	1.03	11.74	22.04
Indigo-MusesT	3	1.04	11.78	20.30
LEDBAT	3	0.30	11.79	51.12
PCC-Allegro	3	6.38	12.15	3.64
PCC-Expr	0	N/A	N/A	N/A
QUIC Cubic	3	3.91	12.20	8.88
SReAM	3	0.21	11.83	0.04
Sprout	3	0.48	11.74	8.25
TaoVA-100x	3	0.01	11.81	55.83
TCP Vegas	3	0.82	11.91	16.40
Verus	3	2.66	12.22	98.42
PCC-Vivace	3	5.89	12.07	0.53
WebRTC media	3	0.05	11.96	25.51

Run 1: Statistics of TCP BBR

Start at: 2019-01-17 06:23:07

End at: 2019-01-17 06:23:37

Below is generated by plot.py at 2019-01-17 06:56:13

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.51 Mbit/s (0.8% utilization)

95th percentile per-packet one-way delay: 11.754 ms

Loss rate: 23.18%

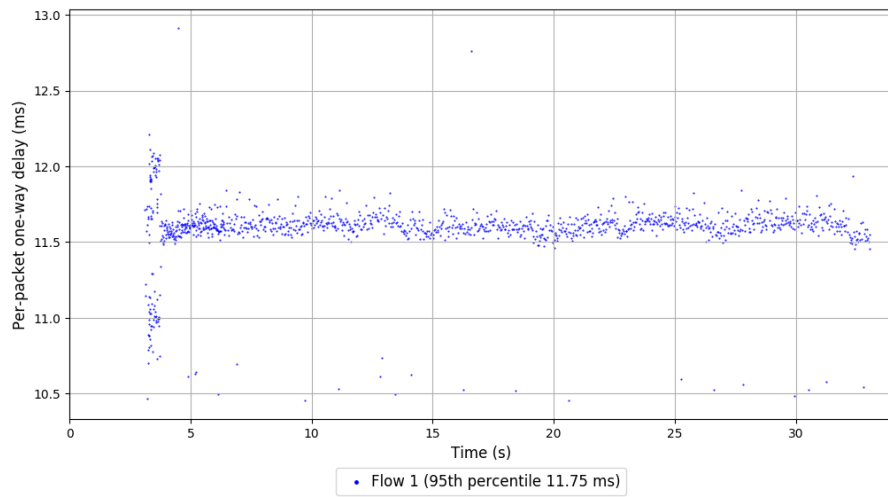
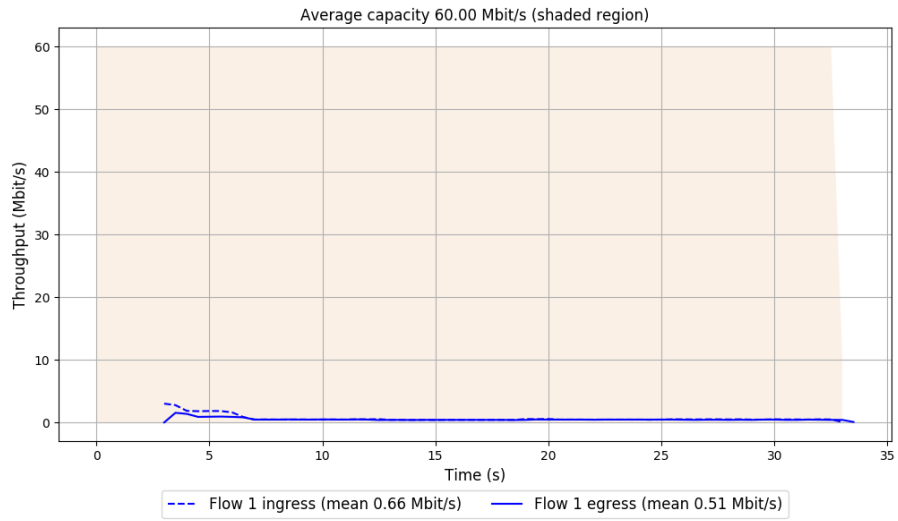
-- Flow 1:

Average throughput: 0.51 Mbit/s

95th percentile per-packet one-way delay: 11.754 ms

Loss rate: 23.18%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2019-01-17 06:35:46

End at: 2019-01-17 06:36:16

Below is generated by plot.py at 2019-01-17 06:56:13

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.65 Mbit/s (1.1% utilization)

95th percentile per-packet one-way delay: 11.829 ms

Loss rate: 33.74%

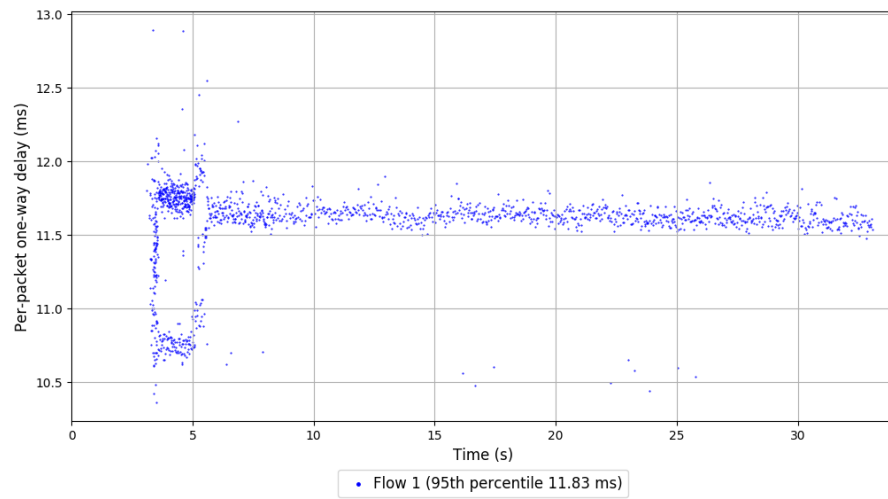
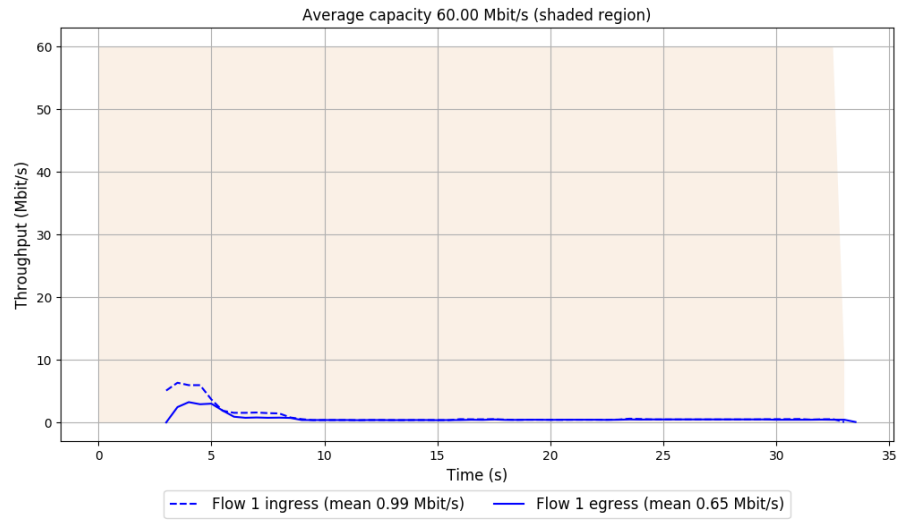
-- Flow 1:

Average throughput: 0.65 Mbit/s

95th percentile per-packet one-way delay: 11.829 ms

Loss rate: 33.74%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2019-01-17 06:48:25

End at: 2019-01-17 06:48:55

Below is generated by plot.py at 2019-01-17 06:56:14

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.54 Mbit/s (0.9% utilization)

95th percentile per-packet one-way delay: 12.155 ms

Loss rate: 30.32%

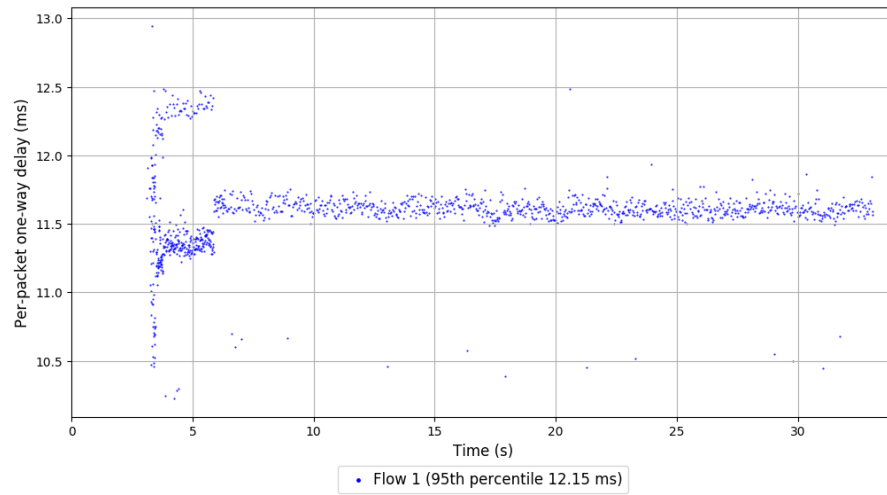
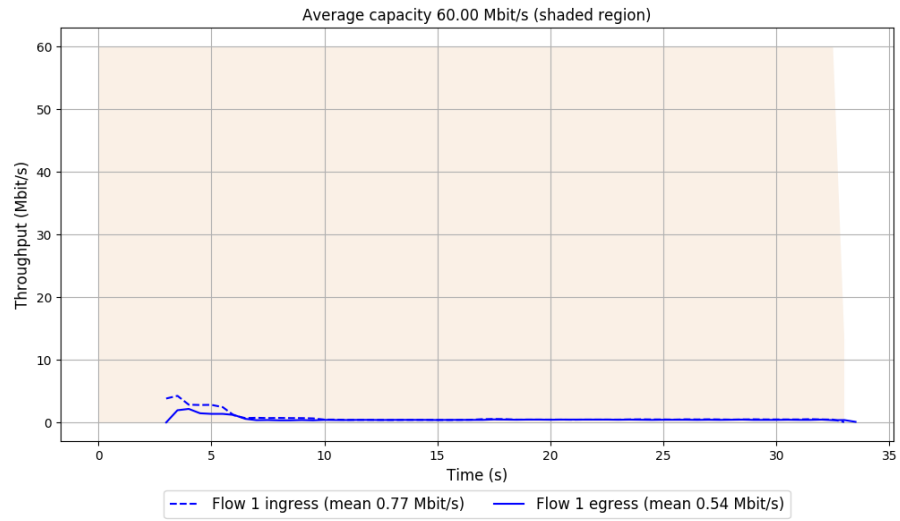
-- Flow 1:

Average throughput: 0.54 Mbit/s

95th percentile per-packet one-way delay: 12.155 ms

Loss rate: 30.32%

Run 3: Report of TCP BBR — Data Link

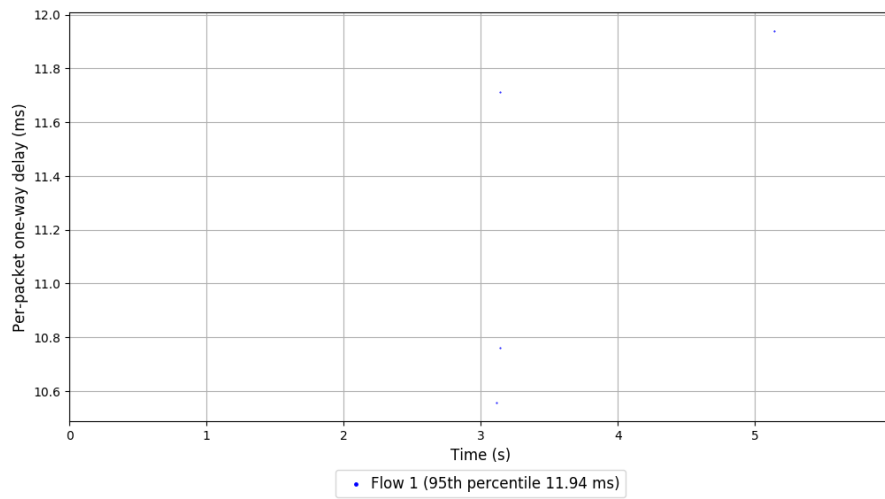
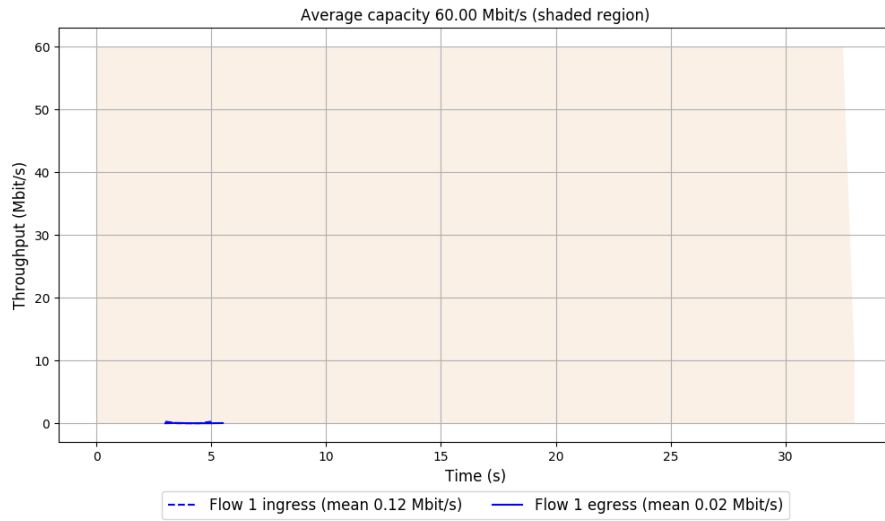


Run 1: Statistics of Copa

Start at: 2019-01-17 06:20:08

End at: 2019-01-17 06:20:38

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2019-01-17 06:32:47

End at: 2019-01-17 06:33:17

Below is generated by plot.py at 2019-01-17 06:56:14

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.01 Mbit/s (0.0% utilization)

95th percentile per-packet one-way delay: 11.781 ms

Loss rate: 90.36%

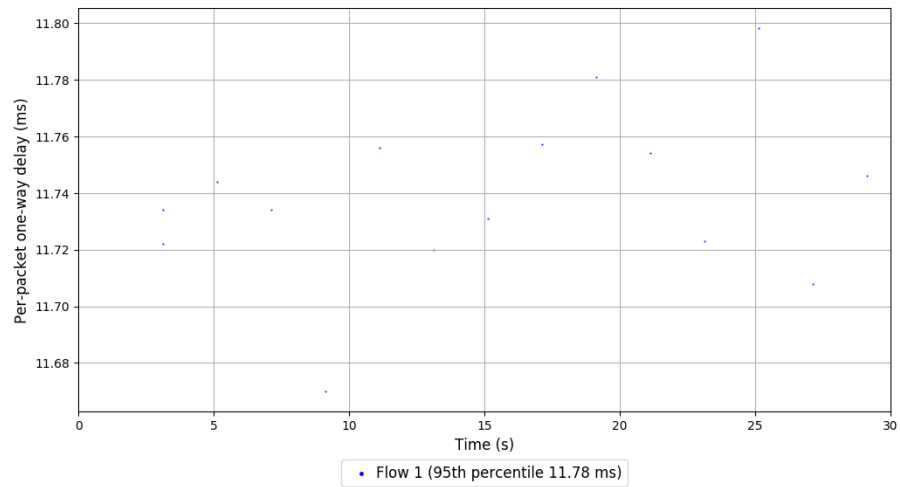
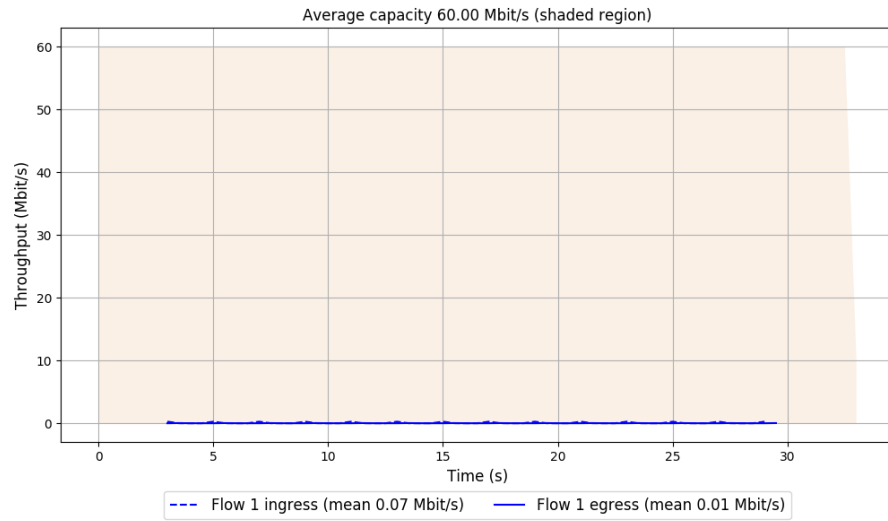
-- Flow 1:

Average throughput: 0.01 Mbit/s

95th percentile per-packet one-way delay: 11.781 ms

Loss rate: 90.36%

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

Start at: 2019-01-17 06:45:26

End at: 2019-01-17 06:45:56

Below is generated by plot.py at 2019-01-17 06:56:14

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.01 Mbit/s (0.0% utilization)

95th percentile per-packet one-way delay: 12.063 ms

Loss rate: 87.83%

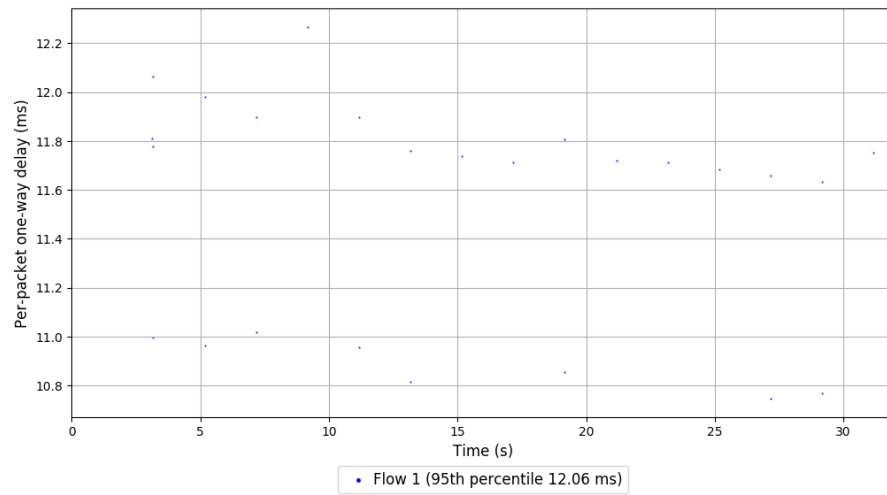
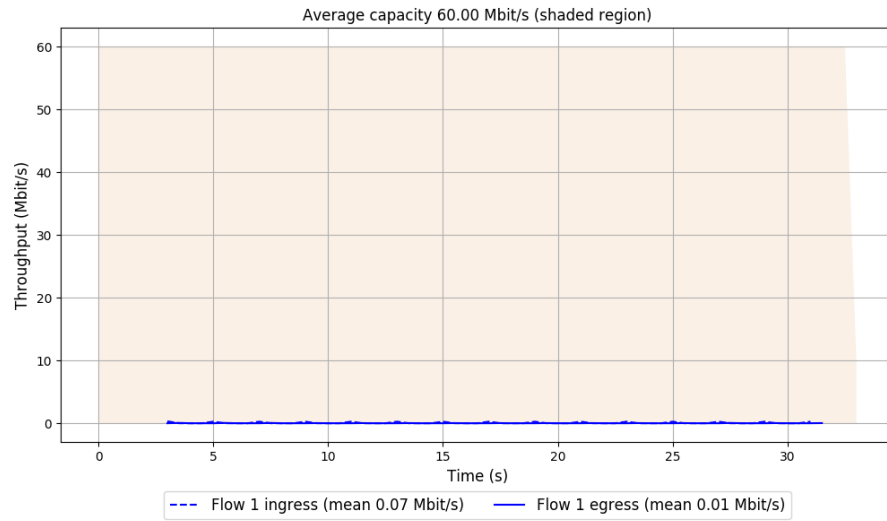
-- Flow 1:

Average throughput: 0.01 Mbit/s

95th percentile per-packet one-way delay: 12.063 ms

Loss rate: 87.83%

Run 3: Report of Copa — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2019-01-17 06:20:44

End at: 2019-01-17 06:21:14

Below is generated by plot.py at 2019-01-17 06:56:14

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 1.23 Mbit/s (2.1% utilization)

95th percentile per-packet one-way delay: 11.886 ms

Loss rate: 8.57%

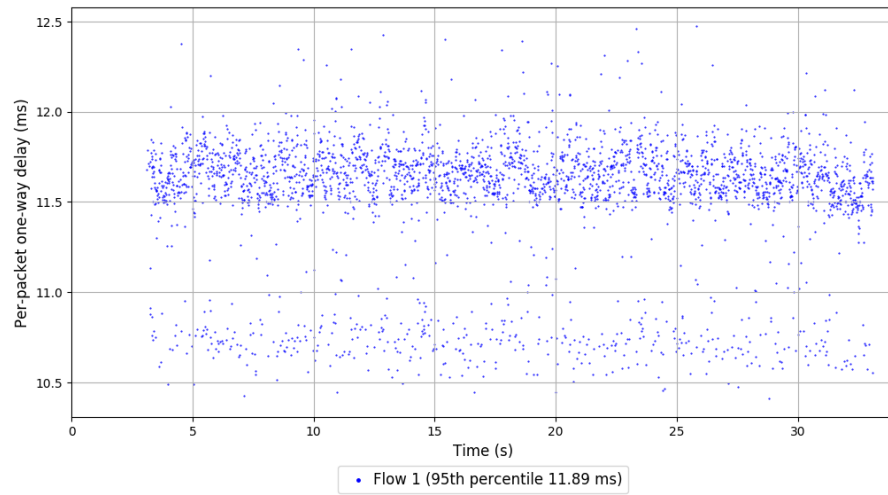
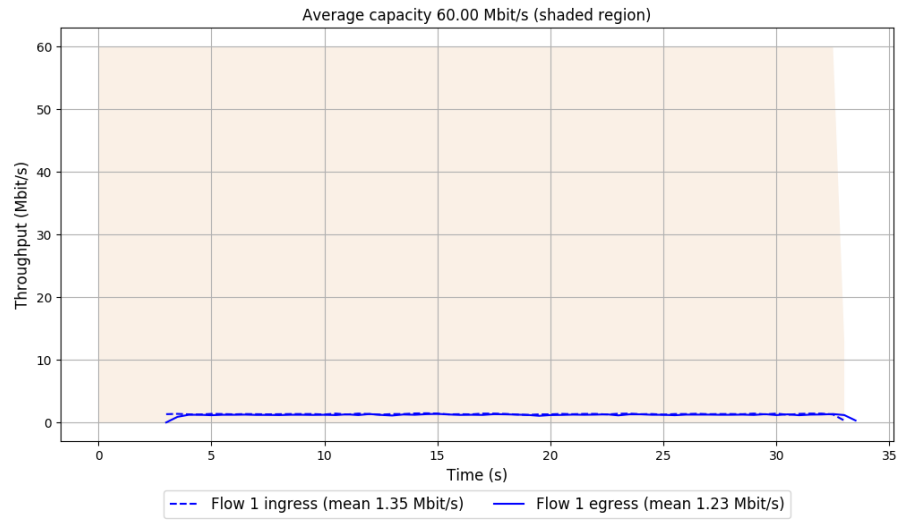
-- Flow 1:

Average throughput: 1.23 Mbit/s

95th percentile per-packet one-way delay: 11.886 ms

Loss rate: 8.57%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2019-01-17 06:33:22

End at: 2019-01-17 06:33:52

Below is generated by plot.py at 2019-01-17 06:56:14

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 1.20 Mbit/s (2.0% utilization)

95th percentile per-packet one-way delay: 11.826 ms

Loss rate: 9.07%

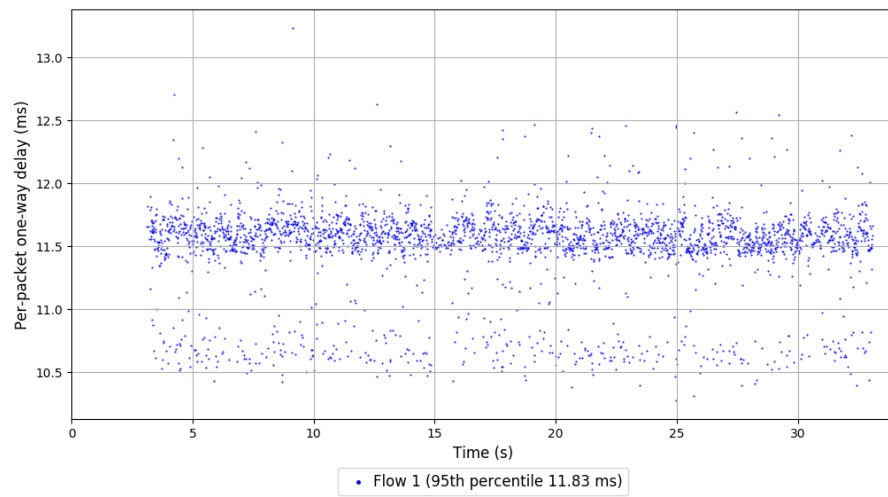
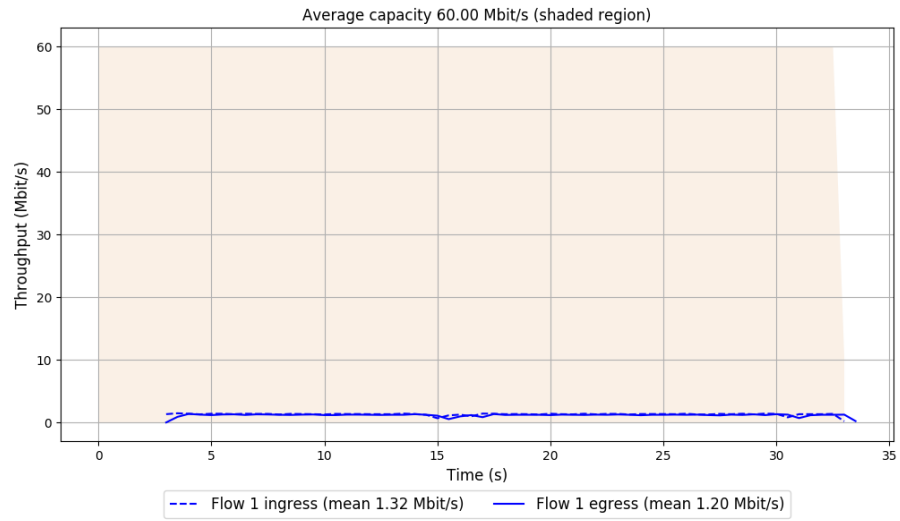
-- Flow 1:

Average throughput: 1.20 Mbit/s

95th percentile per-packet one-way delay: 11.826 ms

Loss rate: 9.07%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2019-01-17 06:46:02

End at: 2019-01-17 06:46:32

Below is generated by plot.py at 2019-01-17 06:56:30

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 1.23 Mbit/s (2.0% utilization)

95th percentile per-packet one-way delay: 11.903 ms

Loss rate: 8.66%

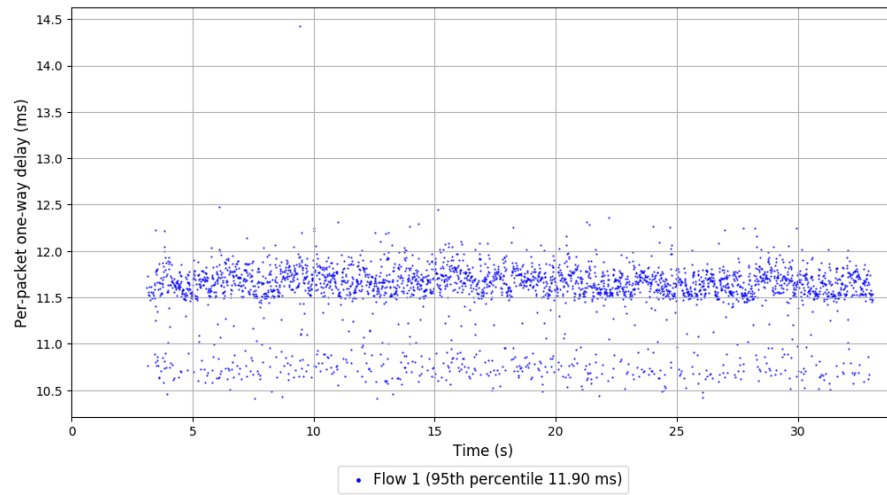
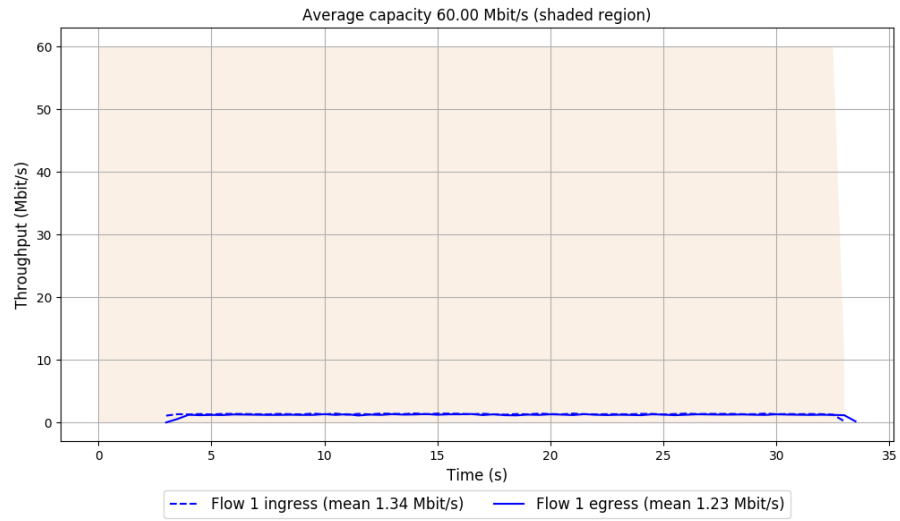
-- Flow 1:

Average throughput: 1.23 Mbit/s

95th percentile per-packet one-way delay: 11.903 ms

Loss rate: 8.66%

Run 3: Report of TCP Cubic — Data Link



Run 1: Statistics of FillP

Start at: 2019-01-17 06:19:33

End at: 2019-01-17 06:20:03

Below is generated by plot.py at 2019-01-17 06:56:30

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.41 Mbit/s (0.7% utilization)

95th percentile per-packet one-way delay: 12.173 ms

Loss rate: 50.05%

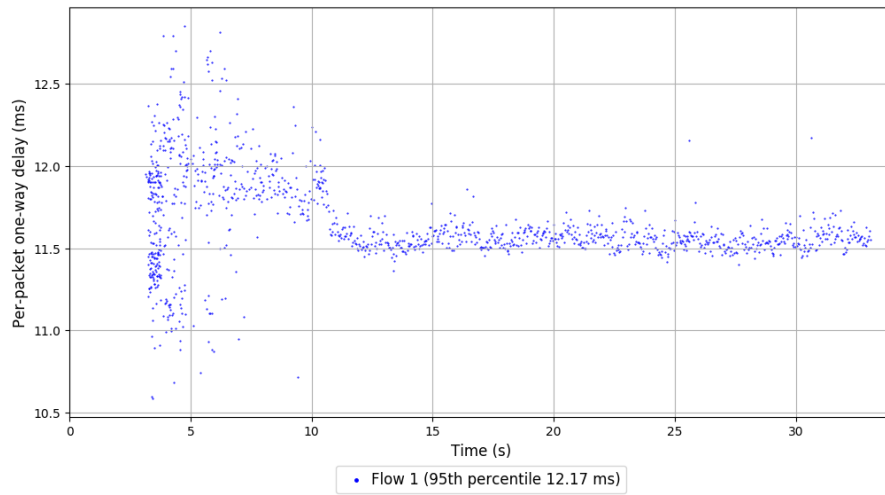
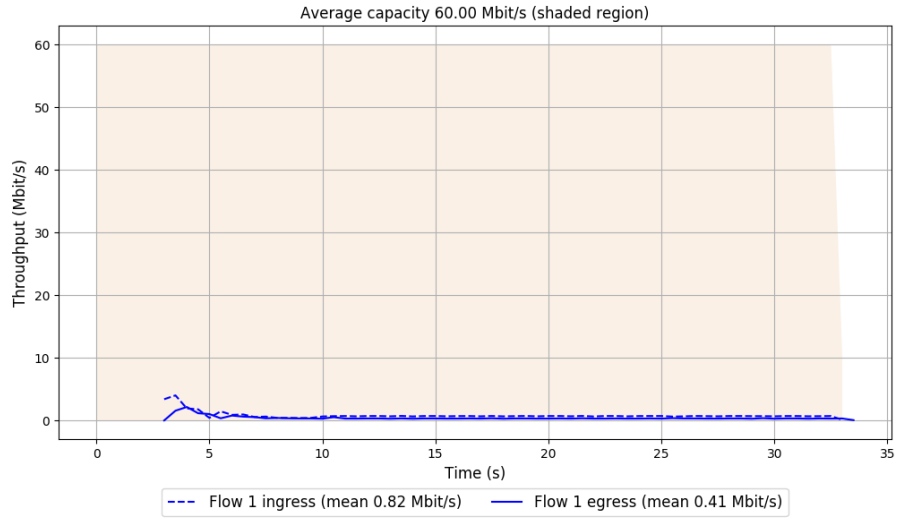
-- Flow 1:

Average throughput: 0.41 Mbit/s

95th percentile per-packet one-way delay: 12.173 ms

Loss rate: 50.05%

Run 1: Report of FillP — Data Link



Run 2: Statistics of FillP

Start at: 2019-01-17 06:32:11

End at: 2019-01-17 06:32:41

Below is generated by plot.py at 2019-01-17 06:56:32

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.43 Mbit/s (0.7% utilization)

95th percentile per-packet one-way delay: 11.894 ms

Loss rate: 49.60%

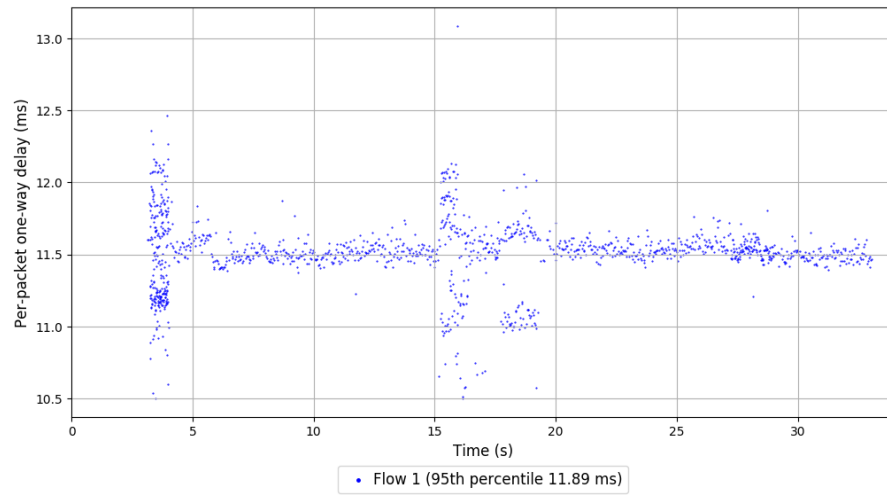
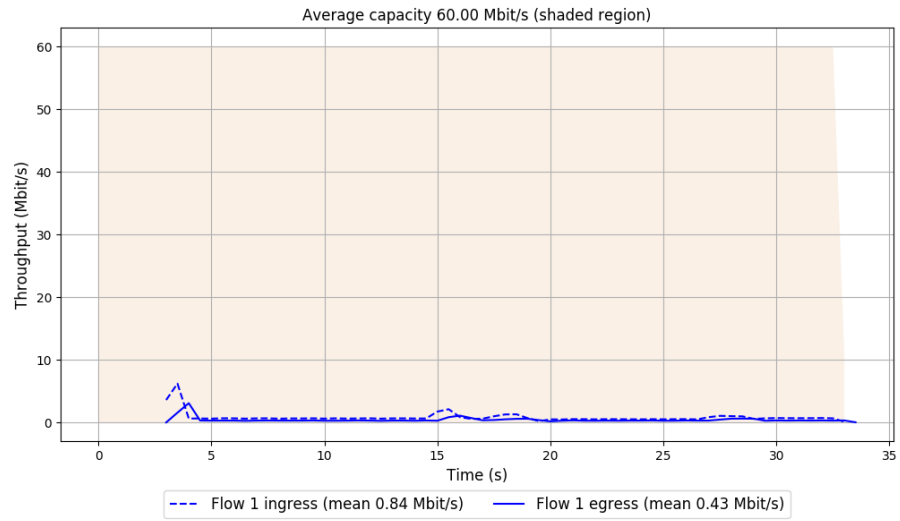
-- Flow 1:

Average throughput: 0.43 Mbit/s

95th percentile per-packet one-way delay: 11.894 ms

Loss rate: 49.60%

Run 2: Report of FillP — Data Link



Run 3: Statistics of FillP

Start at: 2019-01-17 06:44:51

End at: 2019-01-17 06:45:21

Below is generated by plot.py at 2019-01-17 06:56:34

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 1.54 Mbit/s (2.6% utilization)

95th percentile per-packet one-way delay: 12.176 ms

Loss rate: 51.70%

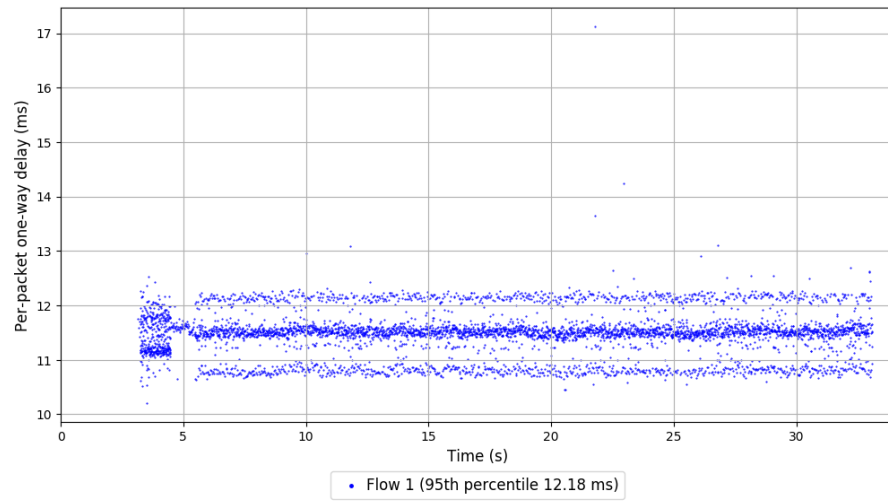
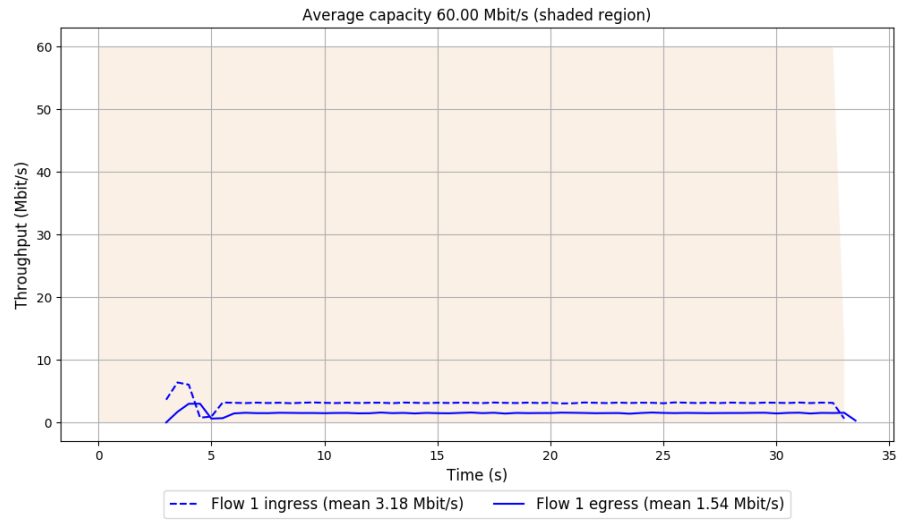
-- Flow 1:

Average throughput: 1.54 Mbit/s

95th percentile per-packet one-way delay: 12.176 ms

Loss rate: 51.70%

Run 3: Report of FillP — Data Link



Run 1: Statistics of FillP-Sheep

Start at: 2019-01-17 06:26:07

End at: 2019-01-17 06:26:37

Below is generated by plot.py at 2019-01-17 06:56:34

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.40 Mbit/s (0.7% utilization)

95th percentile per-packet one-way delay: 11.920 ms

Loss rate: 38.20%

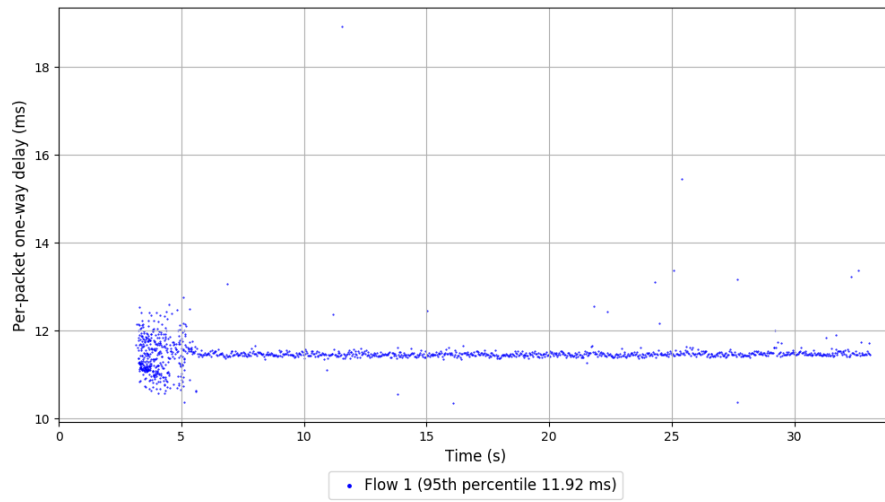
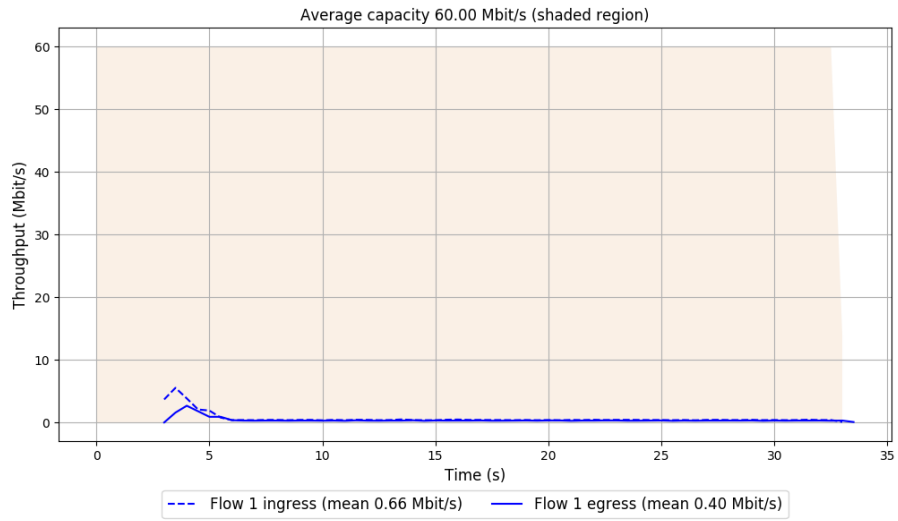
-- Flow 1:

Average throughput: 0.40 Mbit/s

95th percentile per-packet one-way delay: 11.920 ms

Loss rate: 38.20%

Run 1: Report of FillP-Sheep — Data Link



Run 2: Statistics of FillP-Sheep

Start at: 2019-01-17 06:38:45

End at: 2019-01-17 06:39:15

Below is generated by plot.py at 2019-01-17 06:56:34

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.34 Mbit/s (0.6% utilization)

95th percentile per-packet one-way delay: 11.739 ms

Loss rate: 32.63%

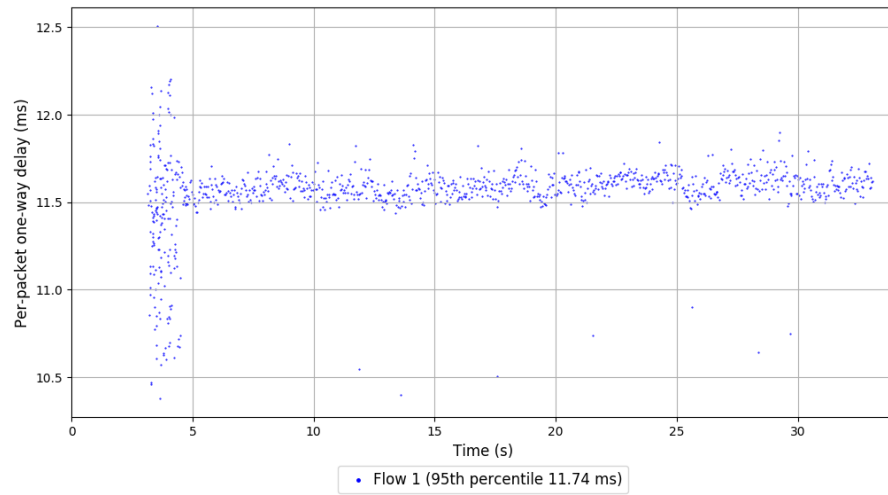
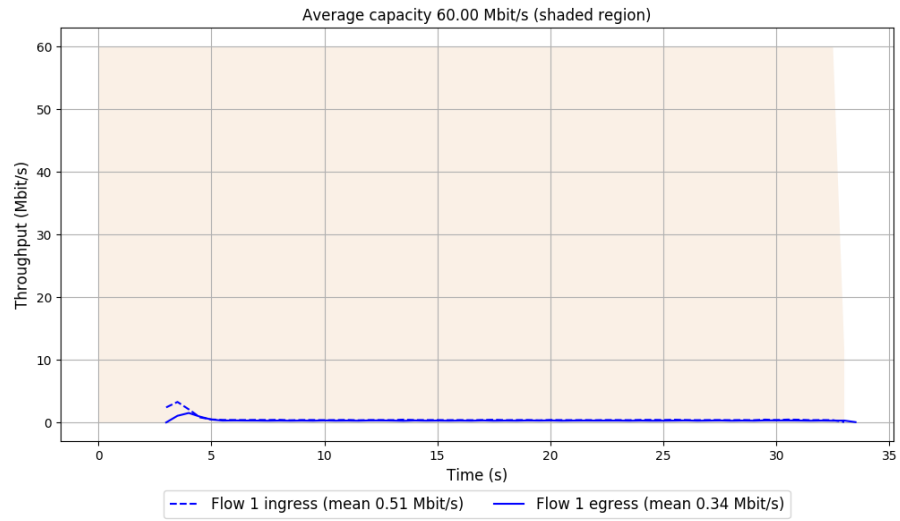
-- Flow 1:

Average throughput: 0.34 Mbit/s

95th percentile per-packet one-way delay: 11.739 ms

Loss rate: 32.63%

Run 2: Report of FillP-Sheep — Data Link



Run 3: Statistics of FillP-Sheep

Start at: 2019-01-17 06:51:25

End at: 2019-01-17 06:51:55

Below is generated by plot.py at 2019-01-17 06:56:34

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.34 Mbit/s (0.6% utilization)

95th percentile per-packet one-way delay: 11.739 ms

Loss rate: 32.16%

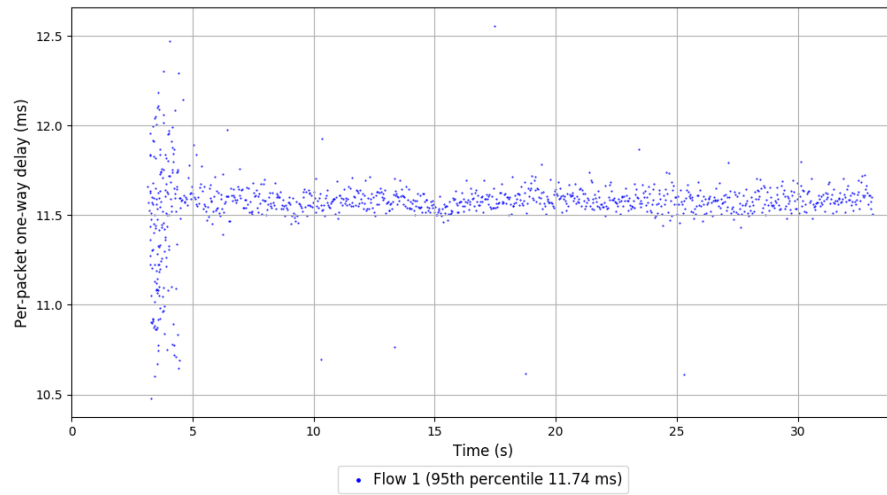
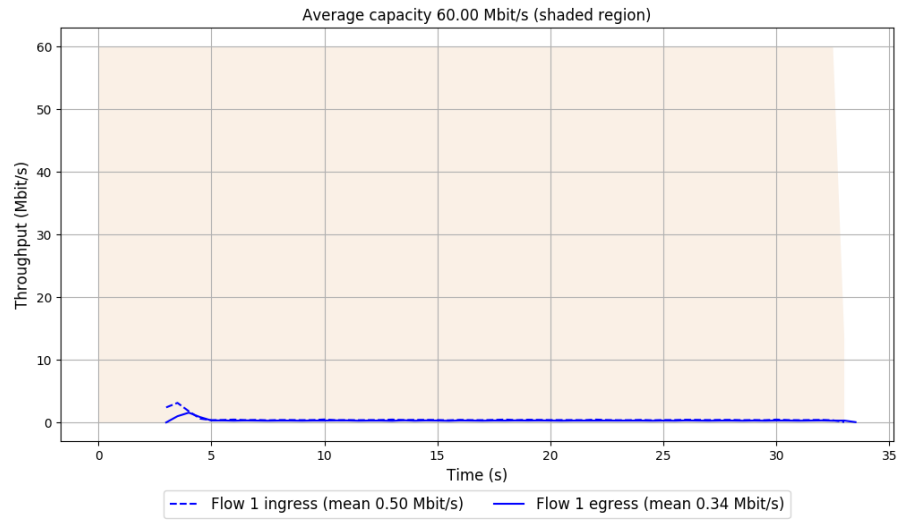
-- Flow 1:

Average throughput: 0.34 Mbit/s

95th percentile per-packet one-way delay: 11.739 ms

Loss rate: 32.16%

Run 3: Report of FillP-Sheep — Data Link



Run 1: Statistics of Indigo

Start at: 2019-01-17 06:25:31

End at: 2019-01-17 06:26:01

Below is generated by plot.py at 2019-01-17 06:56:38

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.92 Mbit/s (1.5% utilization)

95th percentile per-packet one-way delay: 12.421 ms

Loss rate: 95.39%

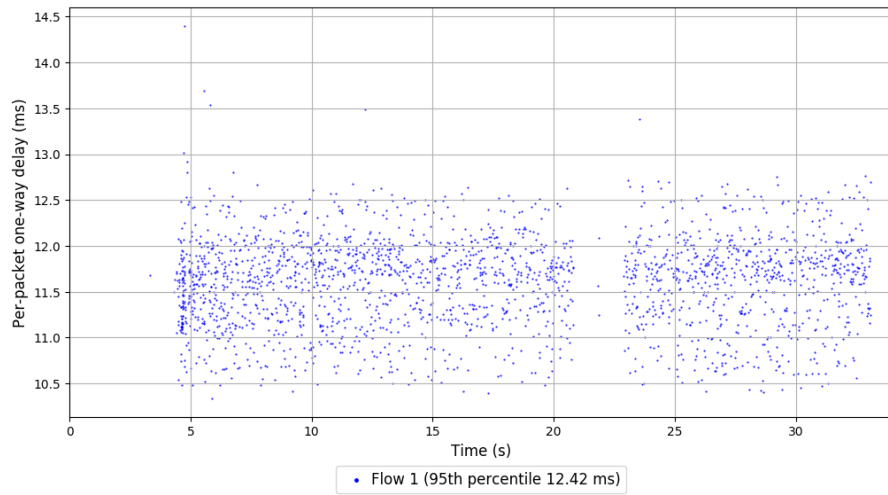
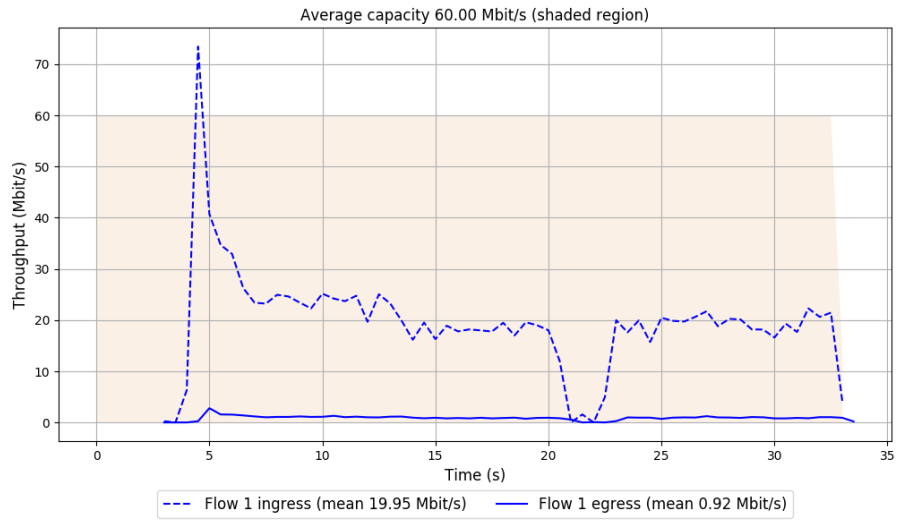
-- Flow 1:

Average throughput: 0.92 Mbit/s

95th percentile per-packet one-way delay: 12.421 ms

Loss rate: 95.39%

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2019-01-17 06:38:09

End at: 2019-01-17 06:38:39

Below is generated by plot.py at 2019-01-17 06:57:00

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 1.04 Mbit/s (1.7% utilization)

95th percentile per-packet one-way delay: 12.441 ms

Loss rate: 95.85%

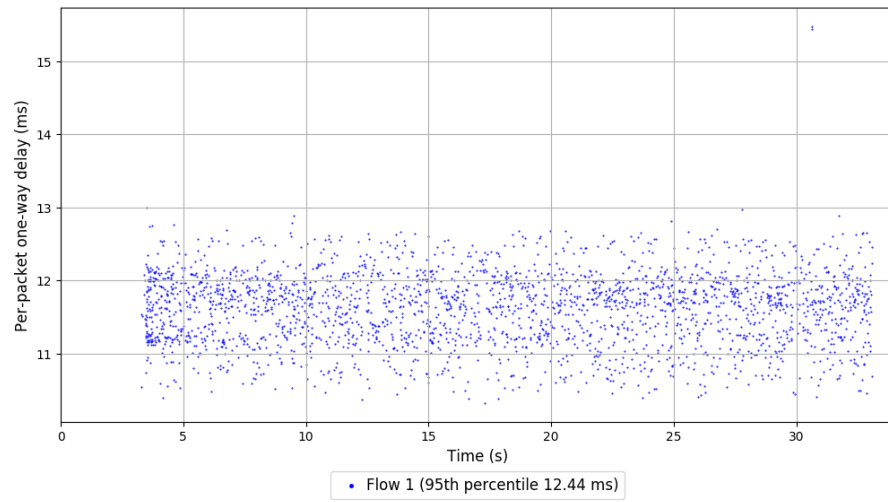
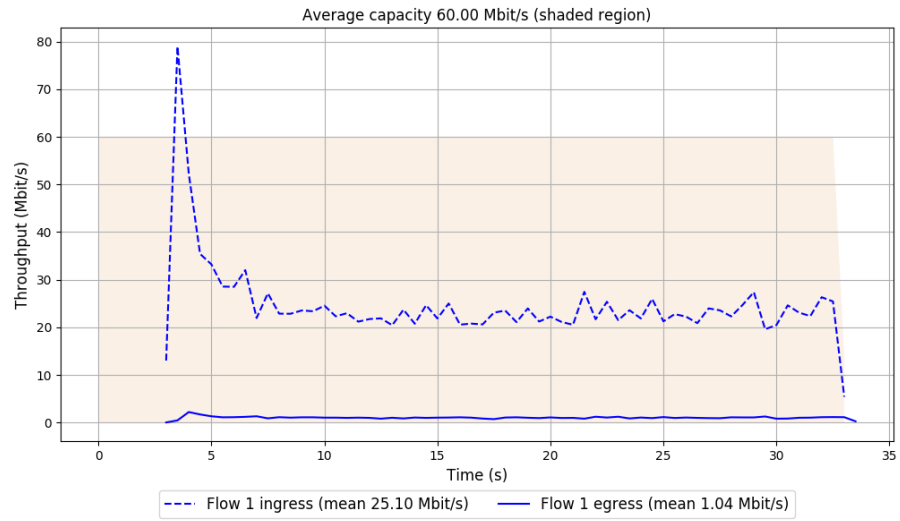
-- Flow 1:

Average throughput: 1.04 Mbit/s

95th percentile per-packet one-way delay: 12.441 ms

Loss rate: 95.85%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2019-01-17 06:50:49

End at: 2019-01-17 06:51:19

Below is generated by plot.py at 2019-01-17 06:57:00

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 1.00 Mbit/s (1.7% utilization)

95th percentile per-packet one-way delay: 12.458 ms

Loss rate: 95.67%

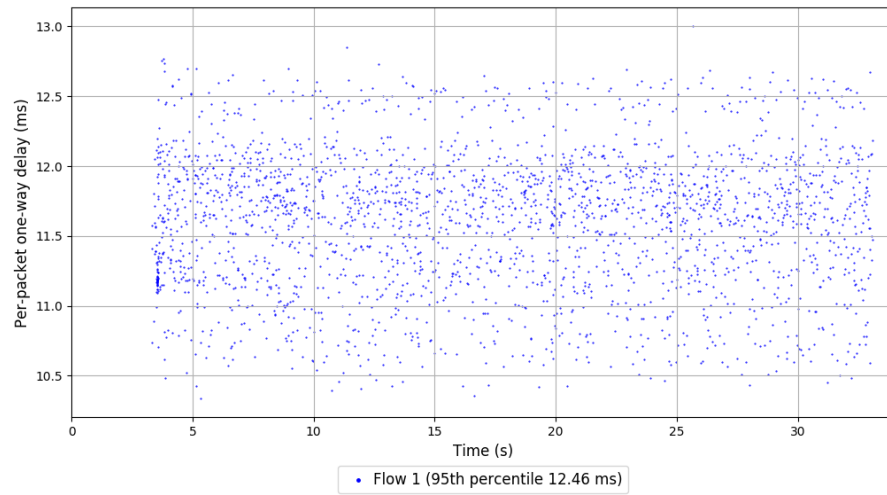
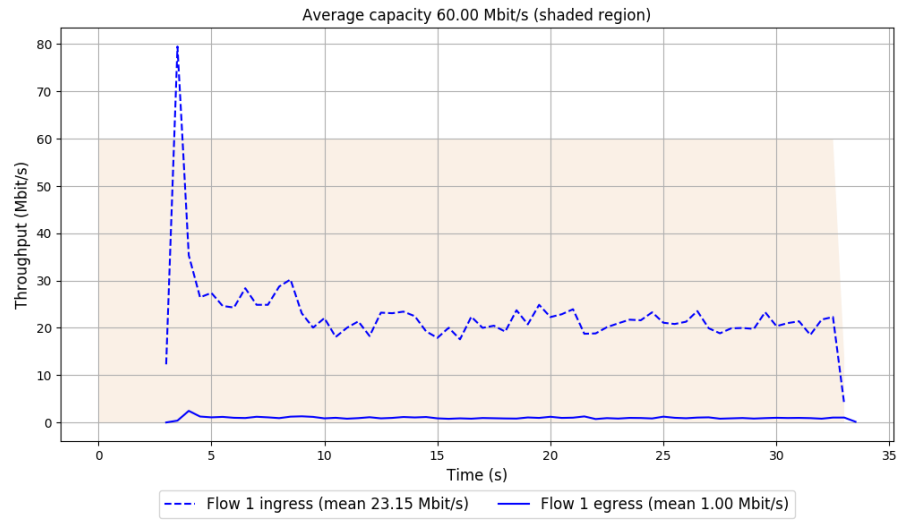
-- Flow 1:

Average throughput: 1.00 Mbit/s

95th percentile per-packet one-way delay: 12.458 ms

Loss rate: 95.67%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Indigo-MusesC3

Start at: 2019-01-17 06:22:32

End at: 2019-01-17 06:23:02

Below is generated by plot.py at 2019-01-17 06:57:00

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 1.03 Mbit/s (1.7% utilization)

95th percentile per-packet one-way delay: 11.706 ms

Loss rate: 14.67%

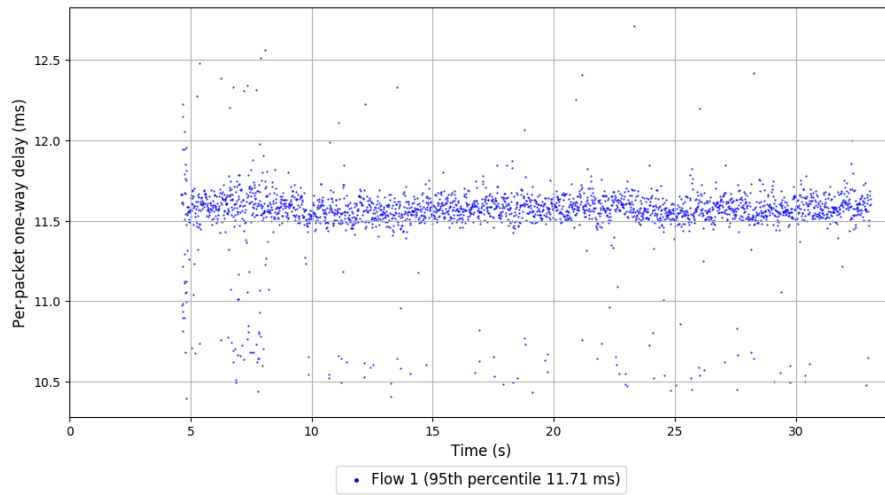
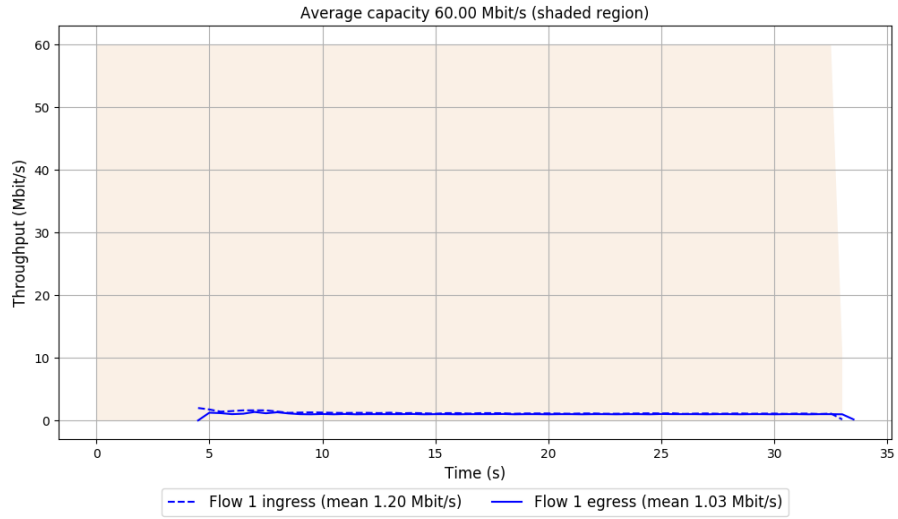
-- Flow 1:

Average throughput: 1.03 Mbit/s

95th percentile per-packet one-way delay: 11.706 ms

Loss rate: 14.67%

Run 1: Report of Indigo-MusesC3 — Data Link



Run 2: Statistics of Indigo-MusesC3

Start at: 2019-01-17 06:35:10

End at: 2019-01-17 06:35:40

Below is generated by plot.py at 2019-01-17 06:57:00

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 1.00 Mbit/s (1.7% utilization)

95th percentile per-packet one-way delay: 11.764 ms

Loss rate: 16.62%

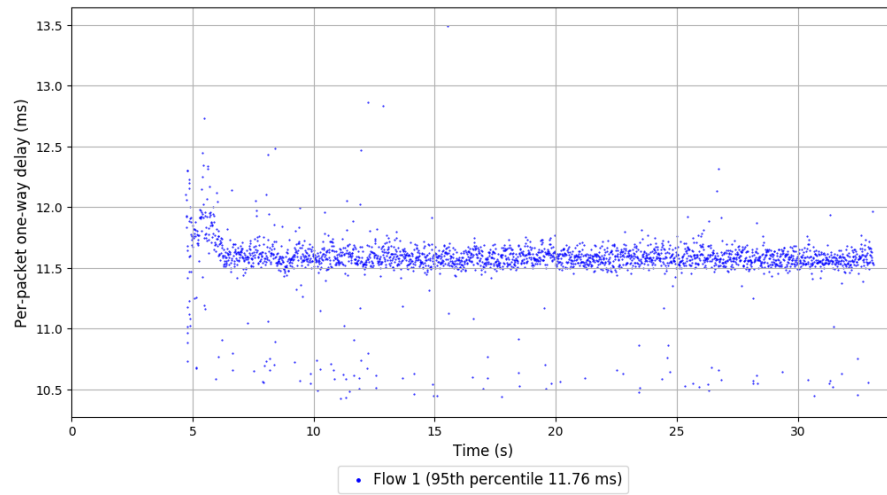
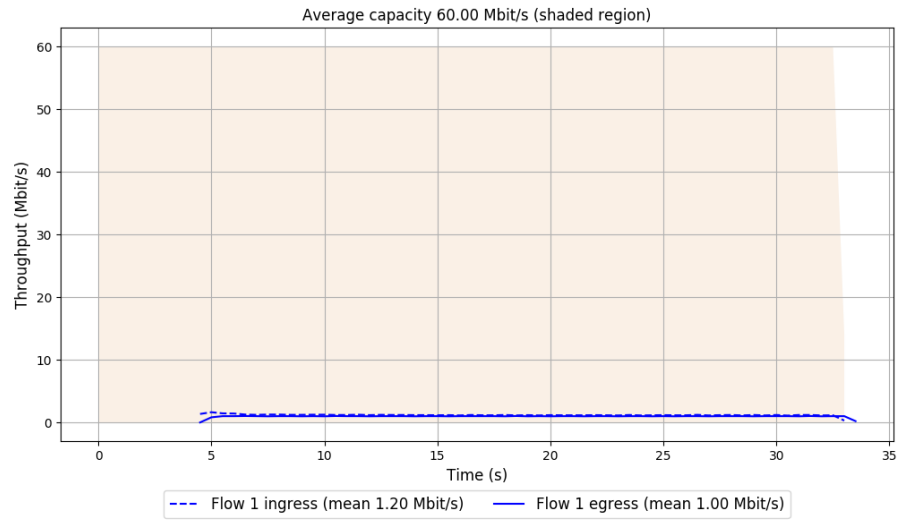
-- Flow 1:

Average throughput: 1.00 Mbit/s

95th percentile per-packet one-way delay: 11.764 ms

Loss rate: 16.62%

Run 2: Report of Indigo-MusesC3 — Data Link



Run 3: Statistics of Indigo-MusesC3

Start at: 2019-01-17 06:47:49

End at: 2019-01-17 06:48:19

Below is generated by plot.py at 2019-01-17 06:57:00

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 1.02 Mbit/s (1.7% utilization)

95th percentile per-packet one-way delay: 11.715 ms

Loss rate: 19.61%

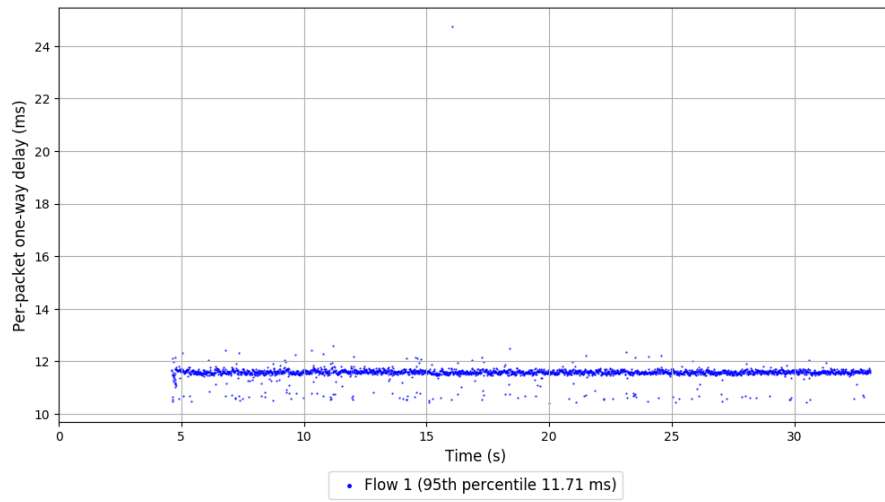
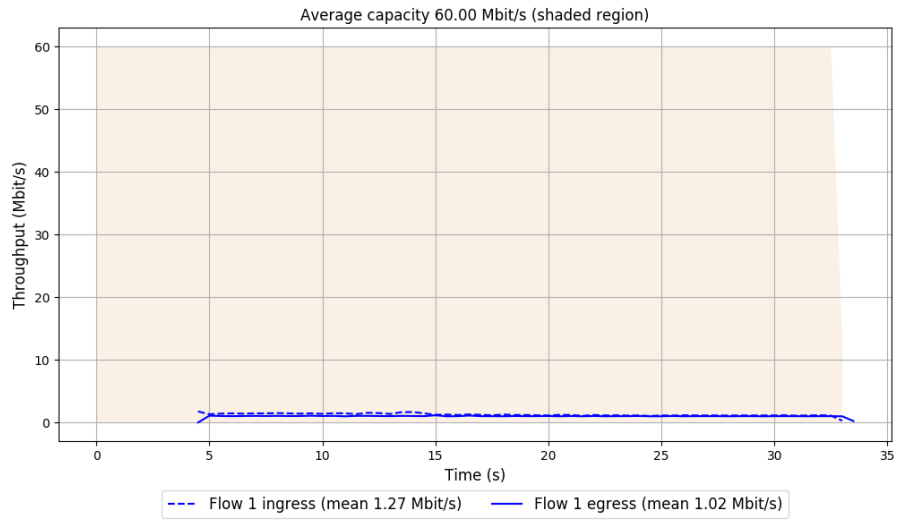
-- Flow 1:

Average throughput: 1.02 Mbit/s

95th percentile per-packet one-way delay: 11.715 ms

Loss rate: 19.61%

Run 3: Report of Indigo-MusesC3 — Data Link



Run 1: Statistics of Indigo-MusesC5

Start at: 2019-01-17 06:17:45

End at: 2019-01-17 06:18:15

Below is generated by plot.py at 2019-01-17 06:57:00

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 1.02 Mbit/s (1.7% utilization)

95th percentile per-packet one-way delay: 11.721 ms

Loss rate: 10.00%

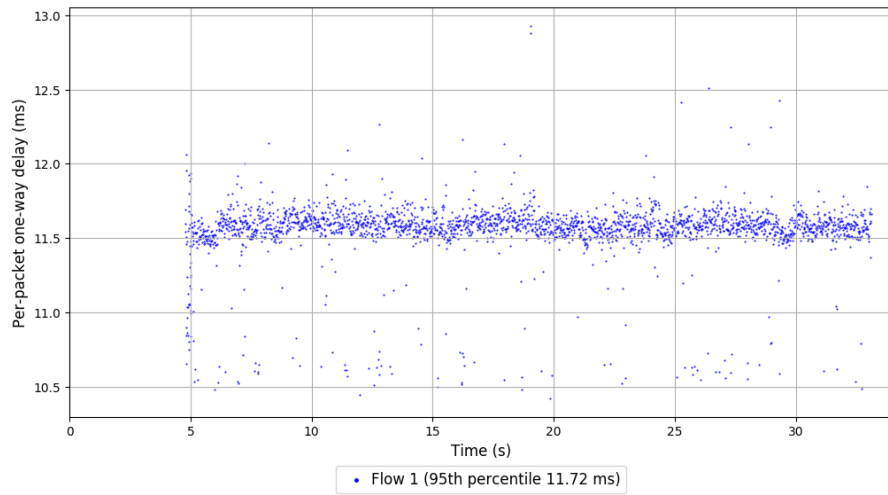
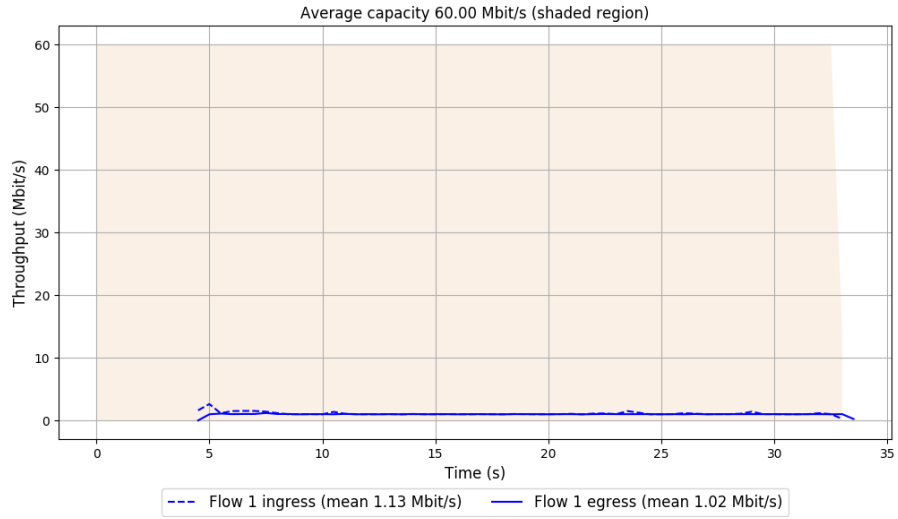
-- Flow 1:

Average throughput: 1.02 Mbit/s

95th percentile per-packet one-way delay: 11.721 ms

Loss rate: 10.00%

Run 1: Report of Indigo-MusesC5 — Data Link



Run 2: Statistics of Indigo-MusesC5

Start at: 2019-01-17 06:30:23

End at: 2019-01-17 06:30:54

Below is generated by plot.py at 2019-01-17 06:57:00

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 1.02 Mbit/s (1.7% utilization)

95th percentile per-packet one-way delay: 11.708 ms

Loss rate: 13.44%

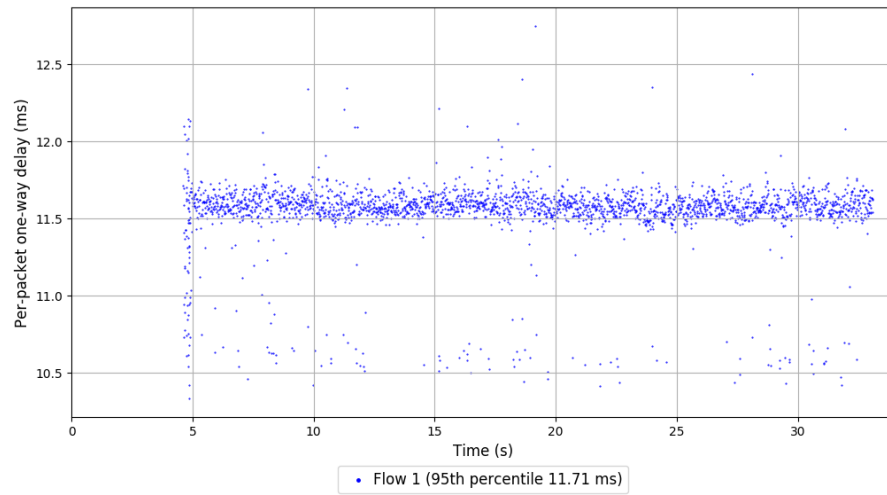
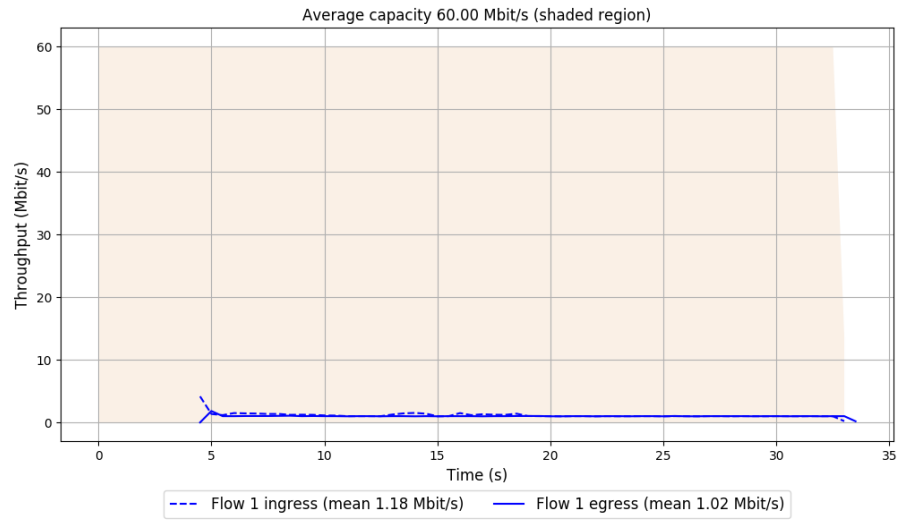
-- Flow 1:

Average throughput: 1.02 Mbit/s

95th percentile per-packet one-way delay: 11.708 ms

Loss rate: 13.44%

Run 2: Report of Indigo-MusesC5 — Data Link



Run 3: Statistics of Indigo-MusesC5

Start at: 2019-01-17 06:43:03

End at: 2019-01-17 06:43:33

Below is generated by plot.py at 2019-01-17 06:57:00

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 1.02 Mbit/s (1.7% utilization)

95th percentile per-packet one-way delay: 11.753 ms

Loss rate: 17.65%

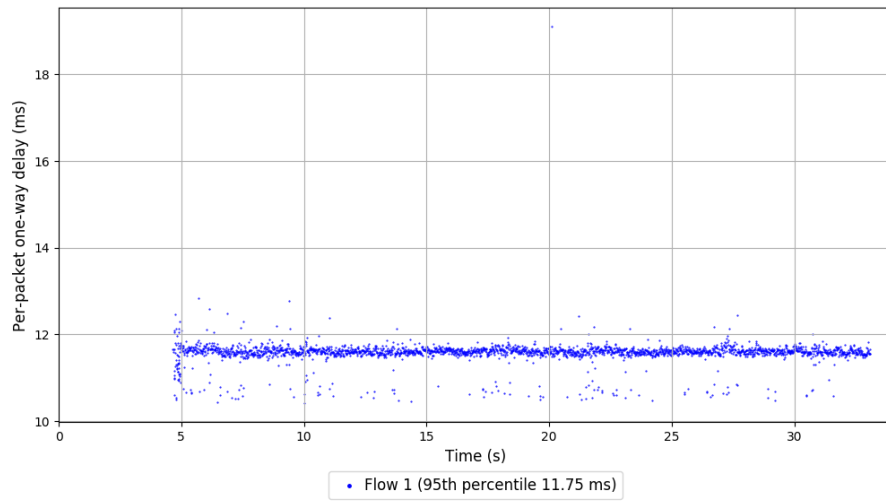
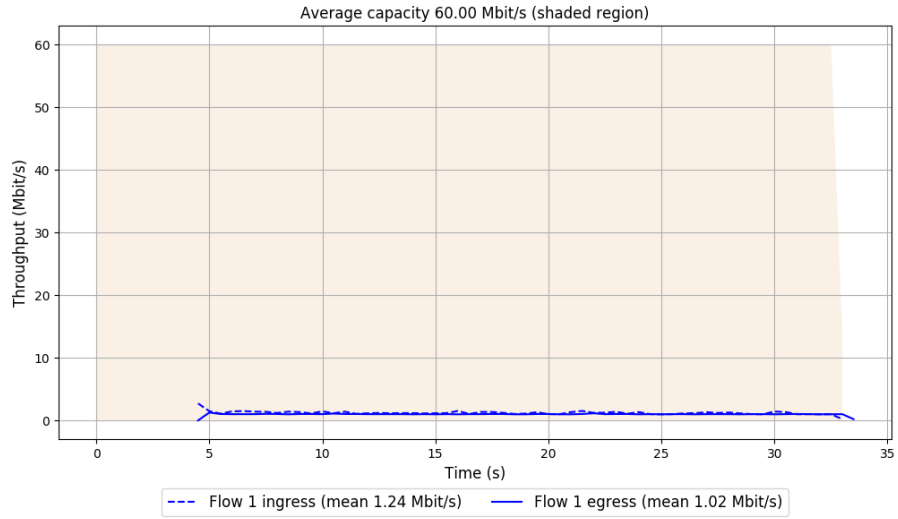
-- Flow 1:

Average throughput: 1.02 Mbit/s

95th percentile per-packet one-way delay: 11.753 ms

Loss rate: 17.65%

Run 3: Report of Indigo-MusesC5 — Data Link



Run 1: Statistics of Indigo-MusesD

Start at: 2019-01-17 06:27:54

End at: 2019-01-17 06:28:24

Below is generated by plot.py at 2019-01-17 06:57:12

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 1.02 Mbit/s (1.7% utilization)

95th percentile per-packet one-way delay: 11.745 ms

Loss rate: 18.62%

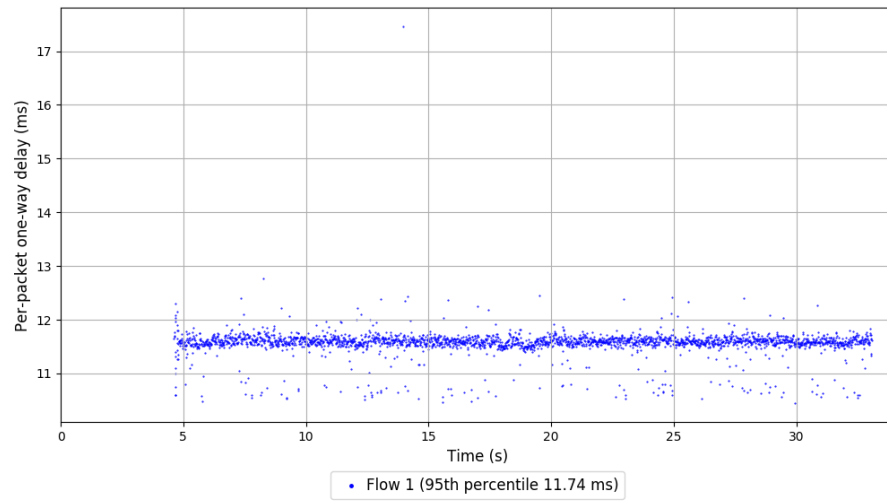
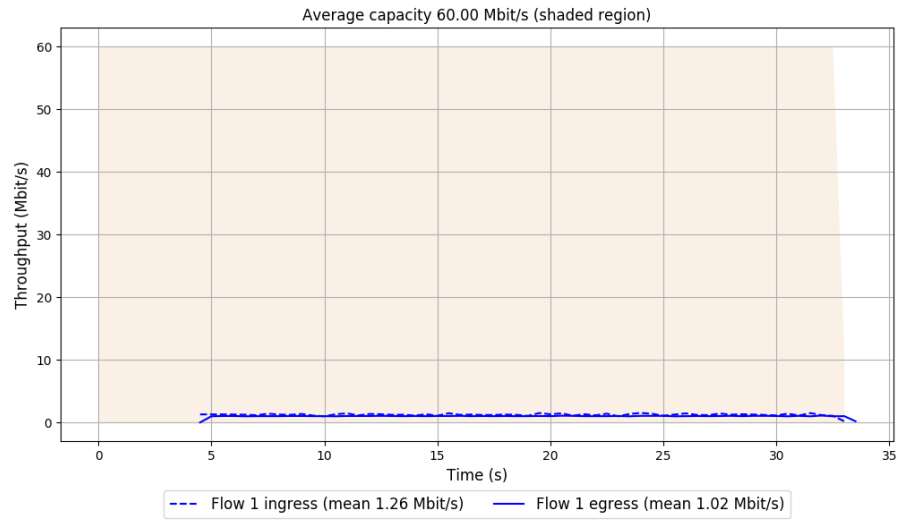
-- Flow 1:

Average throughput: 1.02 Mbit/s

95th percentile per-packet one-way delay: 11.745 ms

Loss rate: 18.62%

Run 1: Report of Indigo-MusesD — Data Link



Run 2: Statistics of Indigo-MusesD

Start at: 2019-01-17 06:40:32

End at: 2019-01-17 06:41:02

Below is generated by plot.py at 2019-01-17 06:57:13

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 1.03 Mbit/s (1.7% utilization)

95th percentile per-packet one-way delay: 11.725 ms

Loss rate: 23.63%

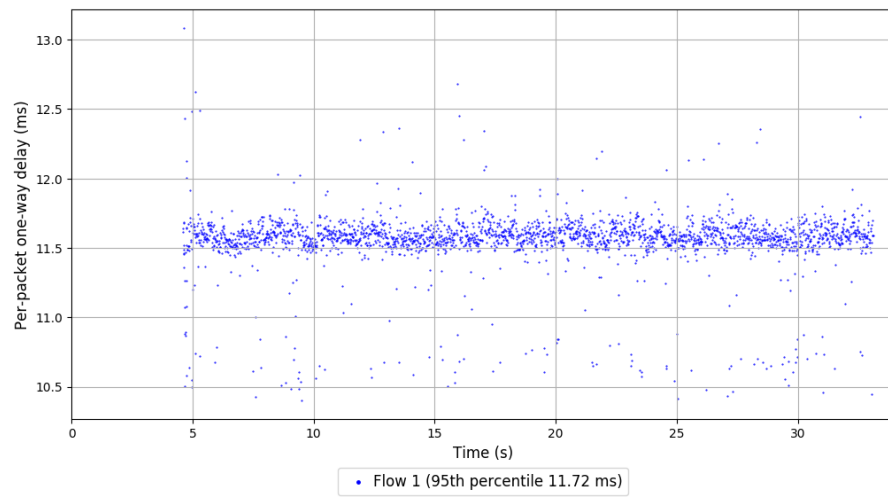
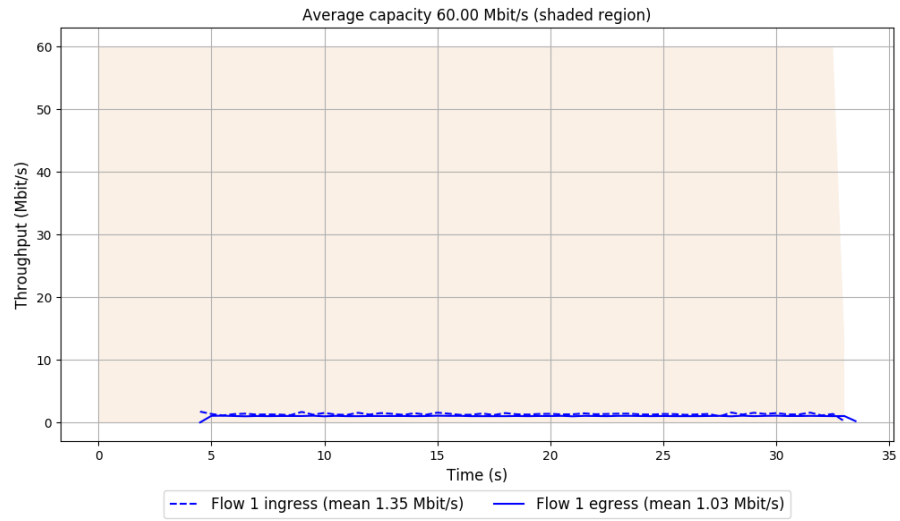
-- Flow 1:

Average throughput: 1.03 Mbit/s

95th percentile per-packet one-way delay: 11.725 ms

Loss rate: 23.63%

Run 2: Report of Indigo-MusesD — Data Link



Run 3: Statistics of Indigo-MusesD

Start at: 2019-01-17 06:53:12

End at: 2019-01-17 06:53:42

Below is generated by plot.py at 2019-01-17 06:57:14

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 1.03 Mbit/s (1.7% utilization)

95th percentile per-packet one-way delay: 11.739 ms

Loss rate: 23.86%

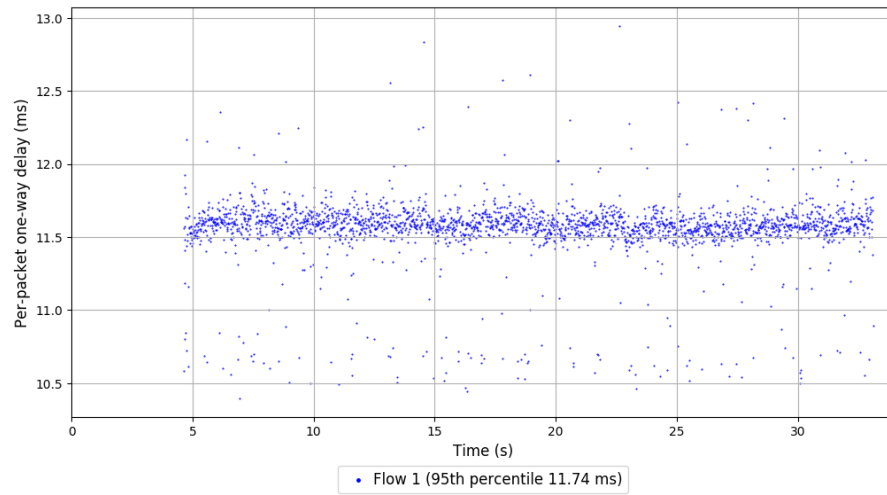
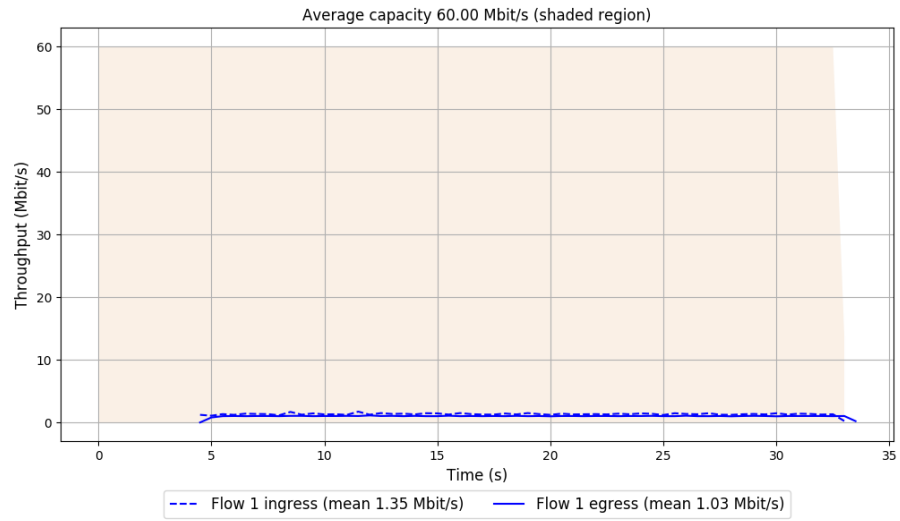
-- Flow 1:

Average throughput: 1.03 Mbit/s

95th percentile per-packet one-way delay: 11.739 ms

Loss rate: 23.86%

Run 3: Report of Indigo-MusesD — Data Link



Run 1: Statistics of Indigo-MuseST

Start at: 2019-01-17 06:23:43

End at: 2019-01-17 06:24:13

Below is generated by plot.py at 2019-01-17 06:57:14

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 1.04 Mbit/s (1.7% utilization)

95th percentile per-packet one-way delay: 11.870 ms

Loss rate: 21.32%

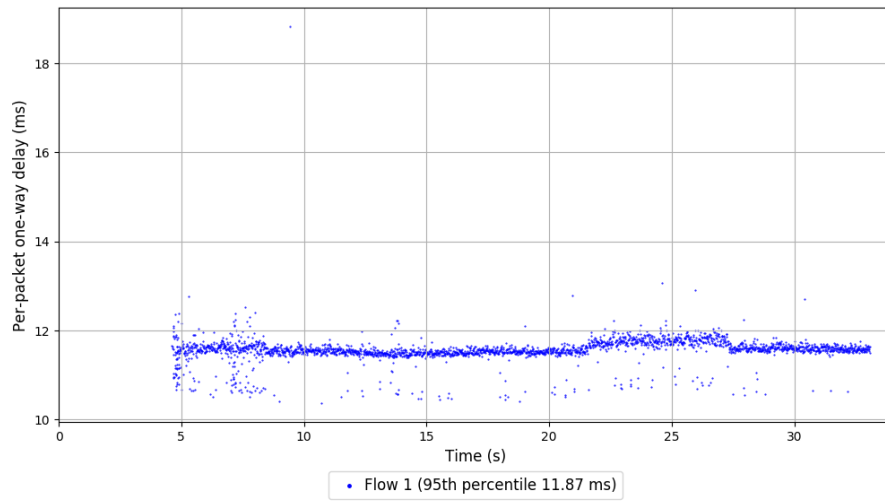
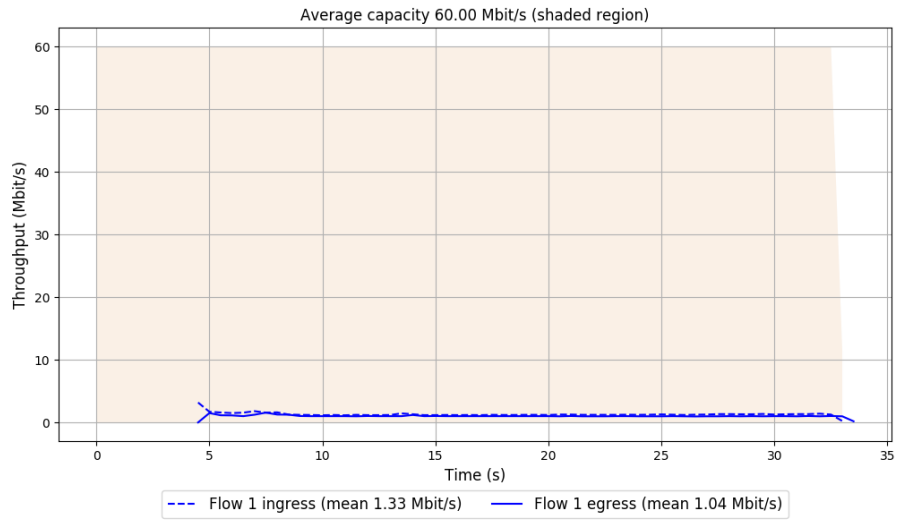
-- Flow 1:

Average throughput: 1.04 Mbit/s

95th percentile per-packet one-way delay: 11.870 ms

Loss rate: 21.32%

Run 1: Report of Indigo-MusesT — Data Link



Run 2: Statistics of Indigo-MuseST

Start at: 2019-01-17 06:36:22

End at: 2019-01-17 06:36:52

Below is generated by plot.py at 2019-01-17 06:57:15

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 1.02 Mbit/s (1.7% utilization)

95th percentile per-packet one-way delay: 11.717 ms

Loss rate: 18.80%

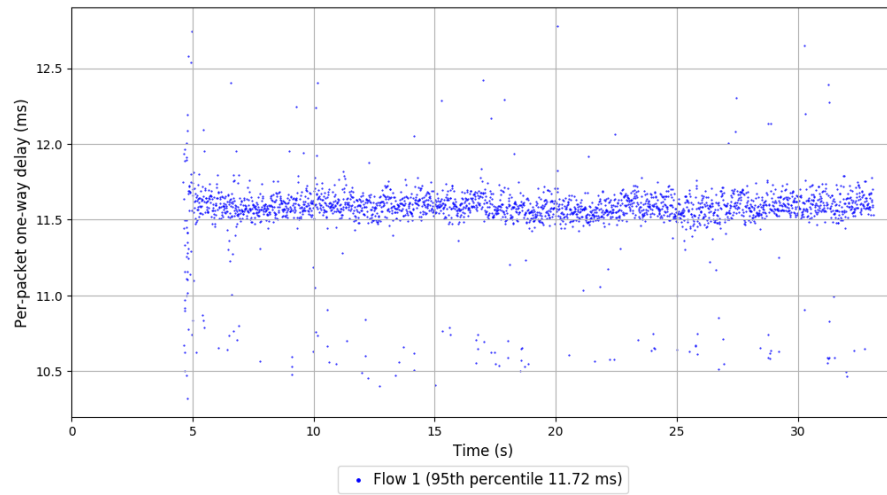
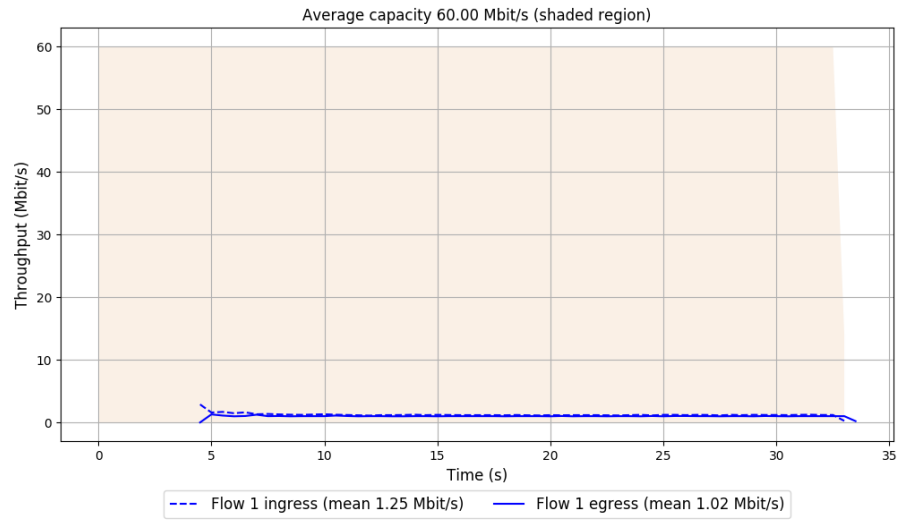
-- Flow 1:

Average throughput: 1.02 Mbit/s

95th percentile per-packet one-way delay: 11.717 ms

Loss rate: 18.80%

Run 2: Report of Indigo-MusesT — Data Link



Run 3: Statistics of Indigo-MuseST

Start at: 2019-01-17 06:49:01

End at: 2019-01-17 06:49:31

Below is generated by plot.py at 2019-01-17 06:57:19

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 1.05 Mbit/s (1.8% utilization)

95th percentile per-packet one-way delay: 11.749 ms

Loss rate: 20.77%

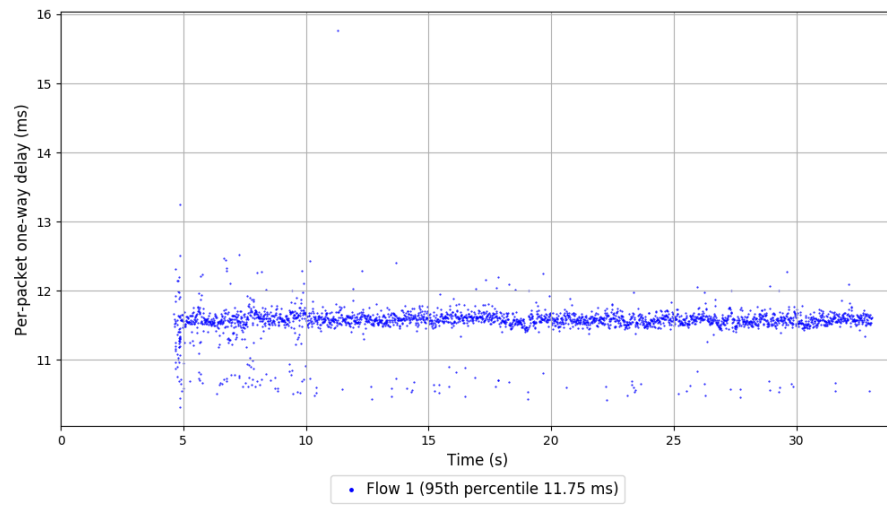
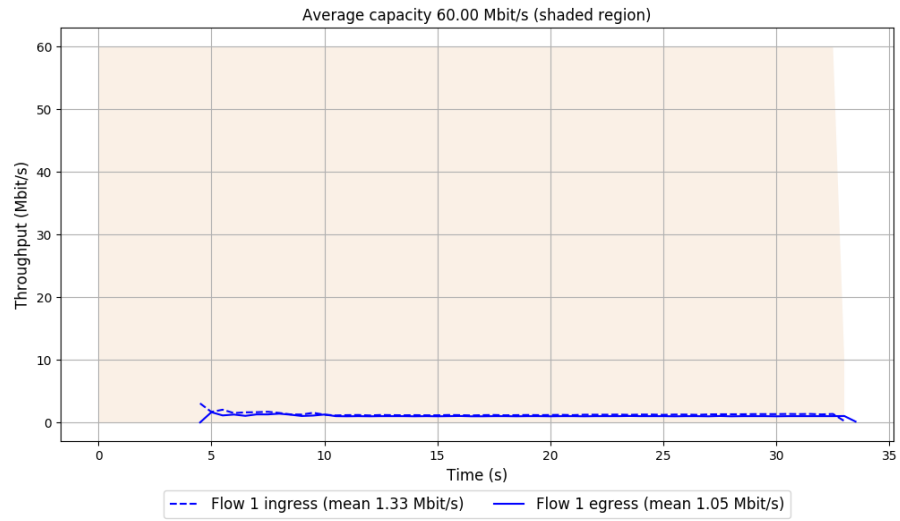
-- Flow 1:

Average throughput: 1.05 Mbit/s

95th percentile per-packet one-way delay: 11.749 ms

Loss rate: 20.77%

Run 3: Report of Indigo-MusesT — Data Link



Run 1: Statistics of LEDBAT

Start at: 2019-01-17 06:27:19

End at: 2019-01-17 06:27:49

Below is generated by plot.py at 2019-01-17 06:57:19

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.32 Mbit/s (0.5% utilization)

95th percentile per-packet one-way delay: 11.772 ms

Loss rate: 50.87%

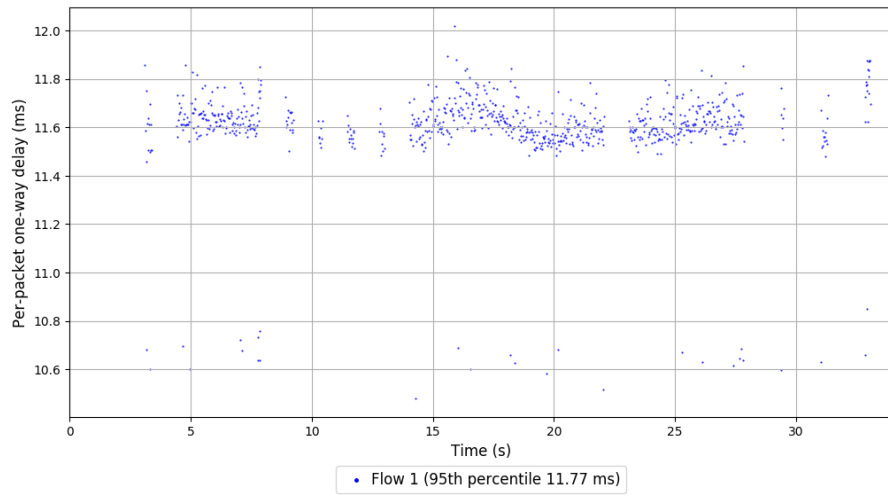
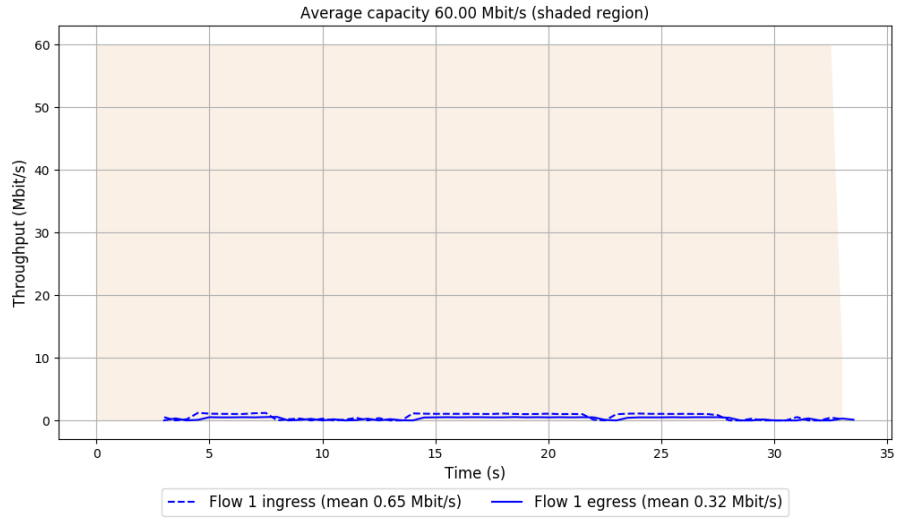
-- Flow 1:

Average throughput: 0.32 Mbit/s

95th percentile per-packet one-way delay: 11.772 ms

Loss rate: 50.87%

Run 1: Report of LEDBAT — Data Link



Run 2: Statistics of LEDBAT

Start at: 2019-01-17 06:39:57

End at: 2019-01-17 06:40:27

Below is generated by plot.py at 2019-01-17 06:57:20

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.32 Mbit/s (0.5% utilization)

95th percentile per-packet one-way delay: 11.885 ms

Loss rate: 51.60%

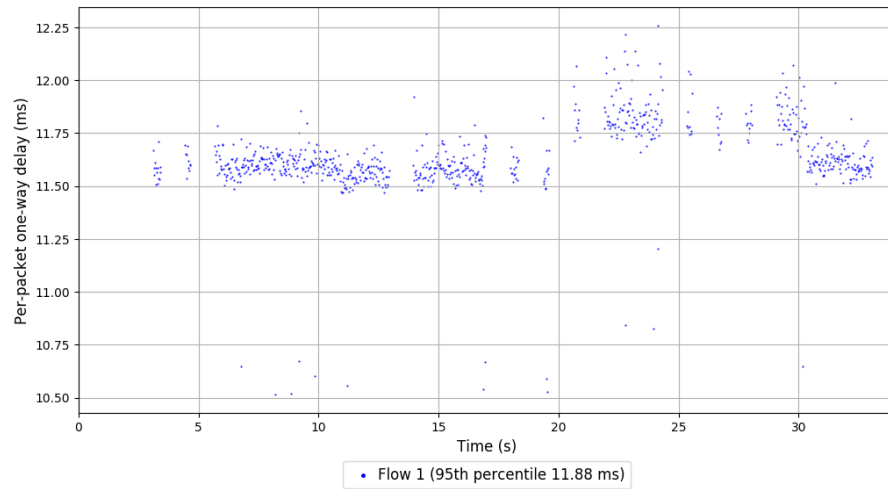
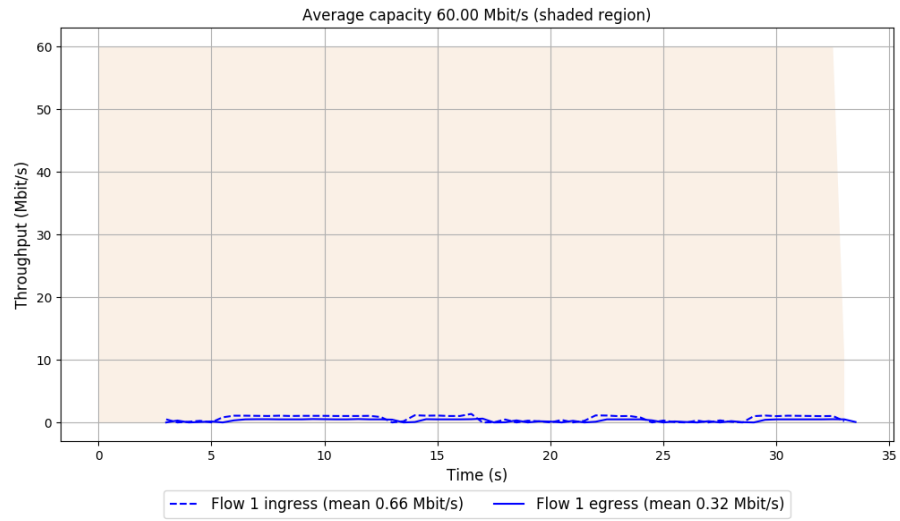
-- Flow 1:

Average throughput: 0.32 Mbit/s

95th percentile per-packet one-way delay: 11.885 ms

Loss rate: 51.60%

Run 2: Report of LEDBAT — Data Link



Run 3: Statistics of LEDBAT

Start at: 2019-01-17 06:52:36

End at: 2019-01-17 06:53:06

Below is generated by plot.py at 2019-01-17 06:57:32

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.26 Mbit/s (0.4% utilization)

95th percentile per-packet one-way delay: 11.719 ms

Loss rate: 50.88%

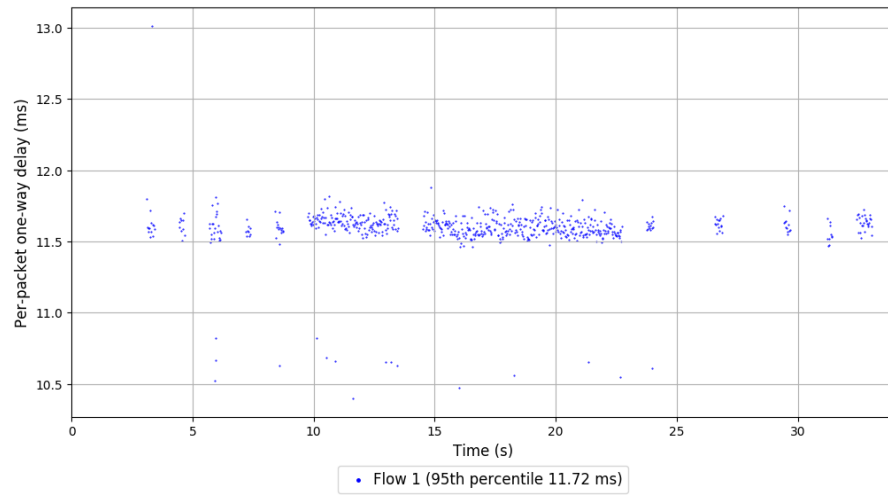
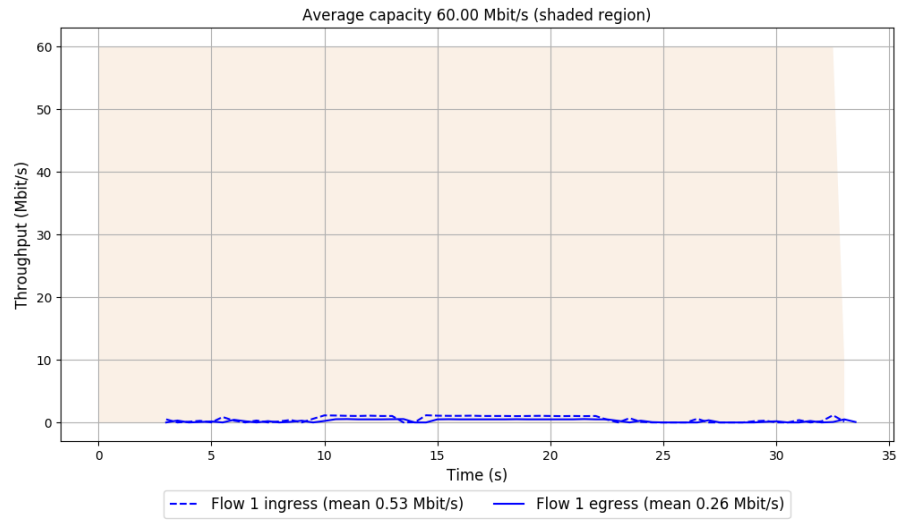
-- Flow 1:

Average throughput: 0.26 Mbit/s

95th percentile per-packet one-way delay: 11.719 ms

Loss rate: 50.88%

Run 3: Report of LEDBAT — Data Link



Run 1: Statistics of PCC-Allegro

Start at: 2019-01-17 06:24:54

End at: 2019-01-17 06:25:24

Below is generated by plot.py at 2019-01-17 06:57:40

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 6.71 Mbit/s (11.2% utilization)

95th percentile per-packet one-way delay: 12.158 ms

Loss rate: 3.85%

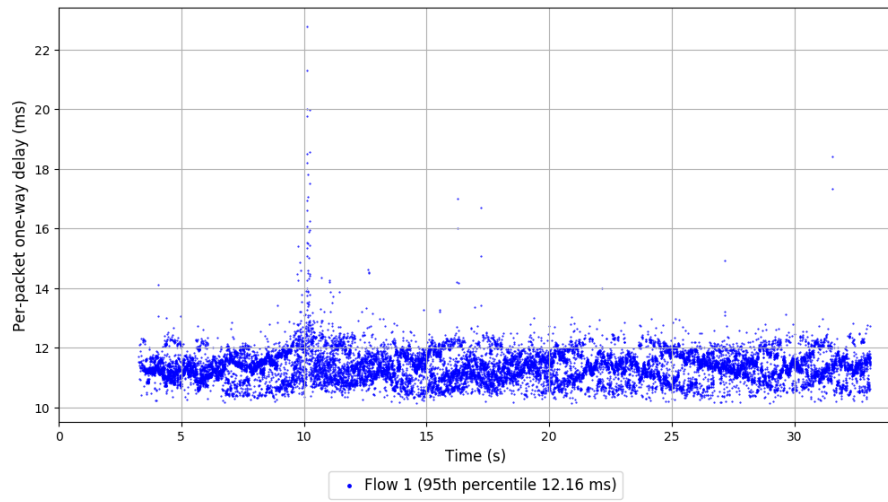
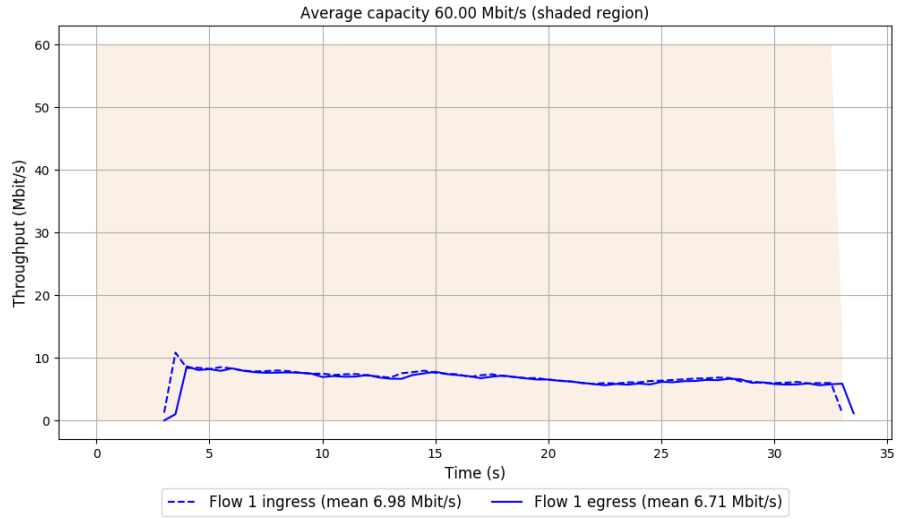
-- Flow 1:

Average throughput: 6.71 Mbit/s

95th percentile per-packet one-way delay: 12.158 ms

Loss rate: 3.85%

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2019-01-17 06:37:33

End at: 2019-01-17 06:38:03

Below is generated by plot.py at 2019-01-17 06:57:43

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 8.91 Mbit/s (14.8% utilization)

95th percentile per-packet one-way delay: 12.085 ms

Loss rate: 3.55%

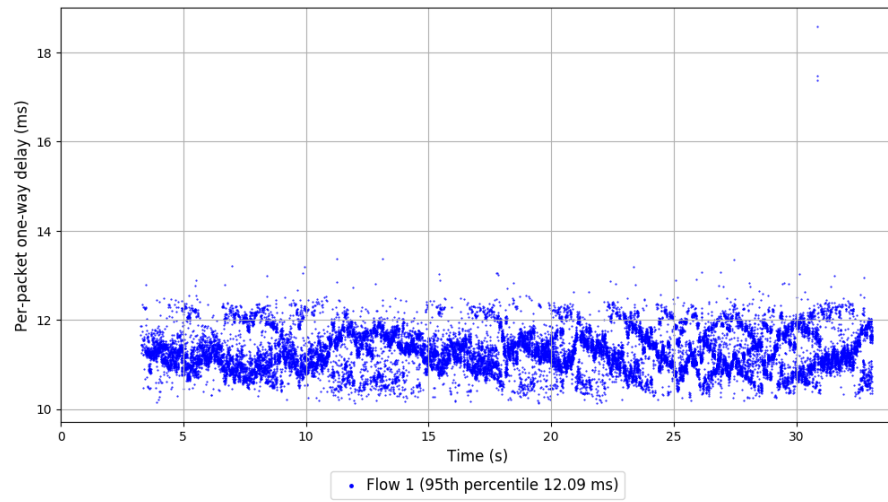
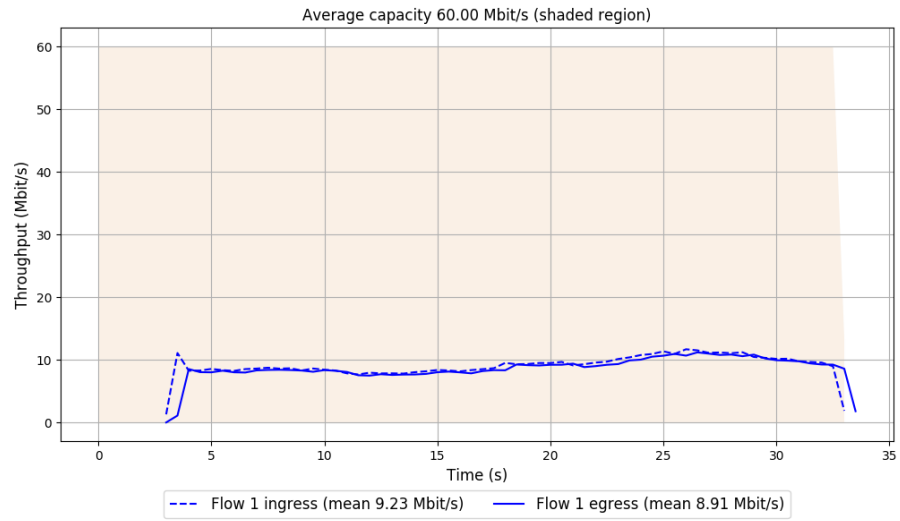
-- Flow 1:

Average throughput: 8.91 Mbit/s

95th percentile per-packet one-way delay: 12.085 ms

Loss rate: 3.55%

Run 2: Report of PCC-Allegro — Data Link



Run 3: Statistics of PCC-Allegro

Start at: 2019-01-17 06:50:13

End at: 2019-01-17 06:50:43

Below is generated by plot.py at 2019-01-17 06:57:43

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 3.52 Mbit/s (5.9% utilization)

95th percentile per-packet one-way delay: 12.202 ms

Loss rate: 3.53%

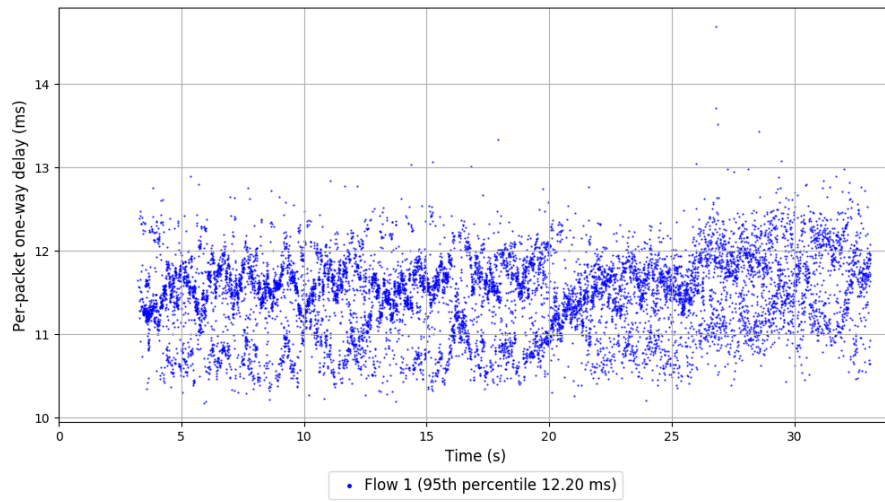
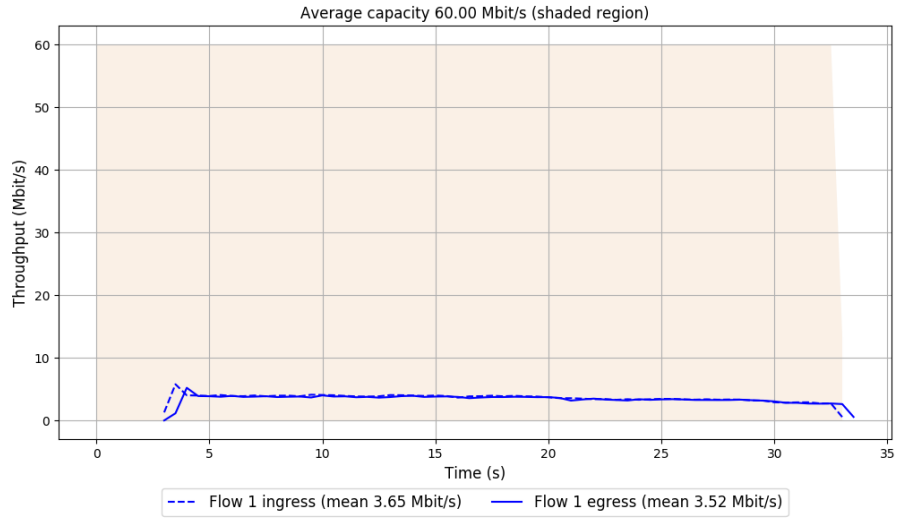
-- Flow 1:

Average throughput: 3.52 Mbit/s

95th percentile per-packet one-way delay: 12.202 ms

Loss rate: 3.53%

Run 3: Report of PCC-Allegro — Data Link

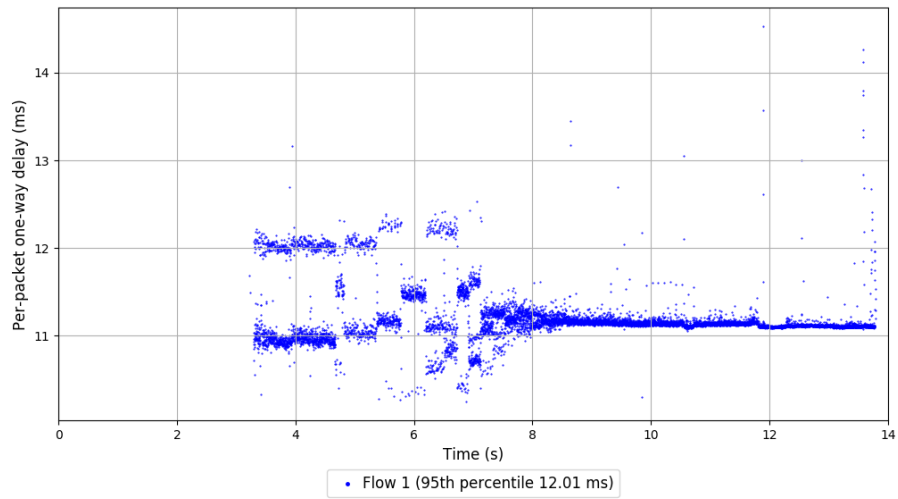
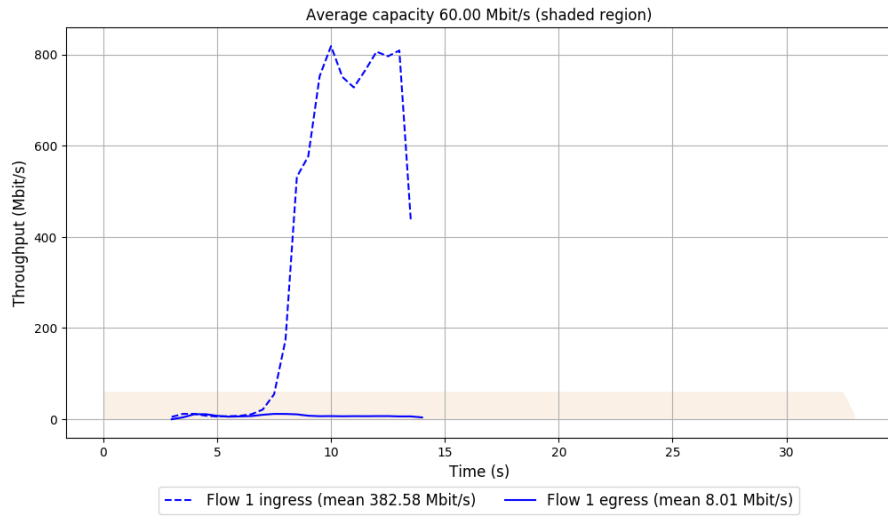


Run 1: Statistics of PCC-Expr

Start at: 2019-01-17 06:28:30

End at: 2019-01-17 06:29:00

Run 1: Report of PCC-Expr — Data Link

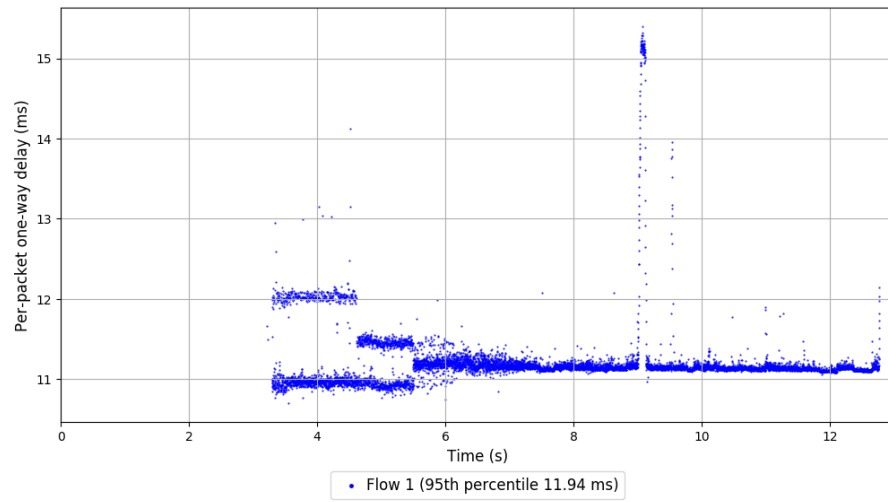
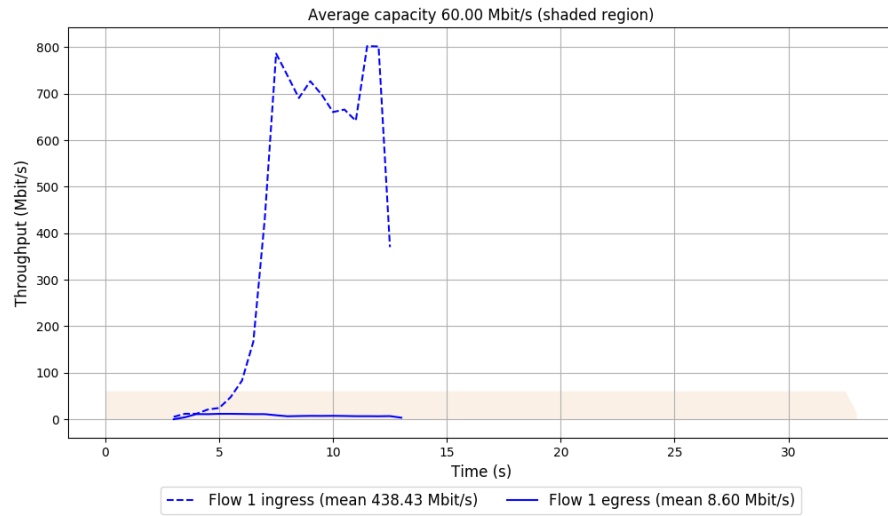


Run 2: Statistics of PCC-Expr

Start at: 2019-01-17 06:41:08

End at: 2019-01-17 06:41:38

Run 2: Report of PCC-Expr — Data Link

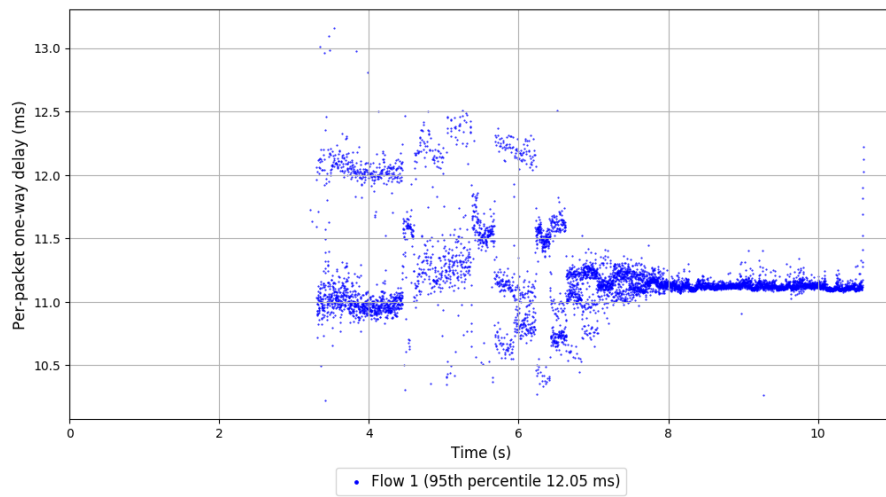
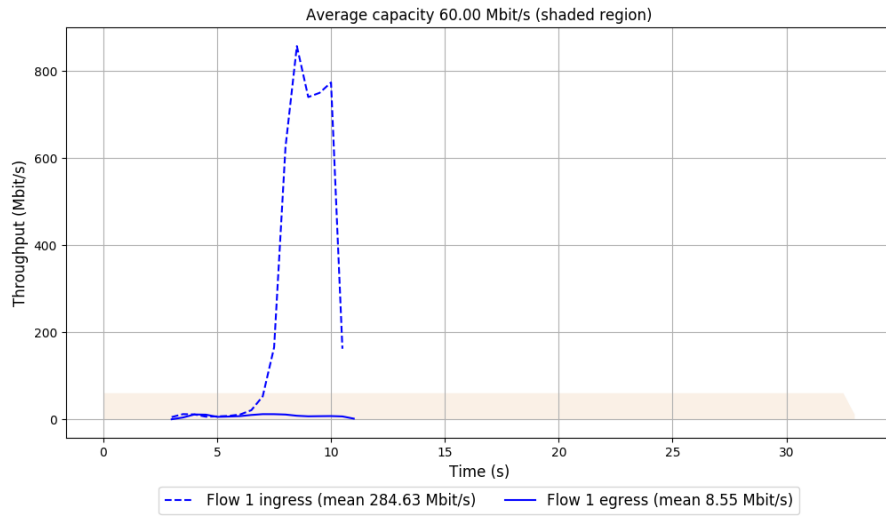


Run 3: Statistics of PCC-Expr

Start at: 2019-01-17 06:53:48

End at: 2019-01-17 06:54:18

Run 3: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2019-01-17 06:18:21

End at: 2019-01-17 06:18:51

Below is generated by plot.py at 2019-01-17 06:58:49

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 3.94 Mbit/s (6.6% utilization)

95th percentile per-packet one-way delay: 12.189 ms

Loss rate: 8.71%

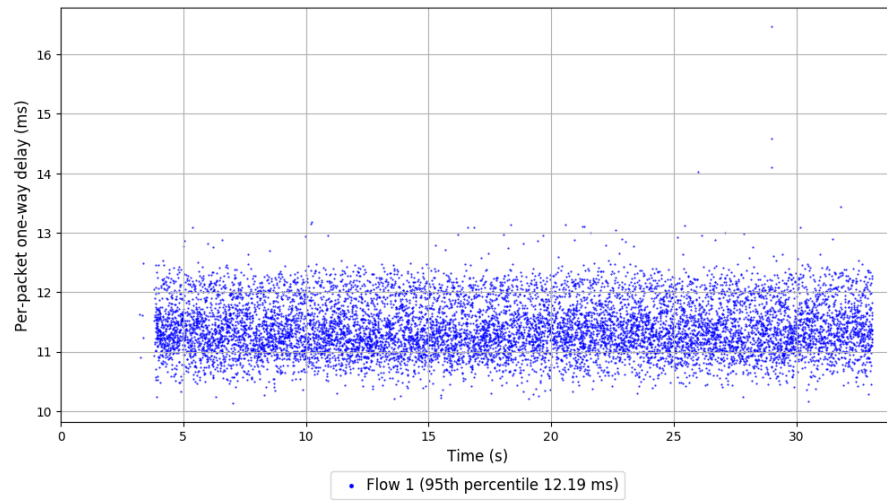
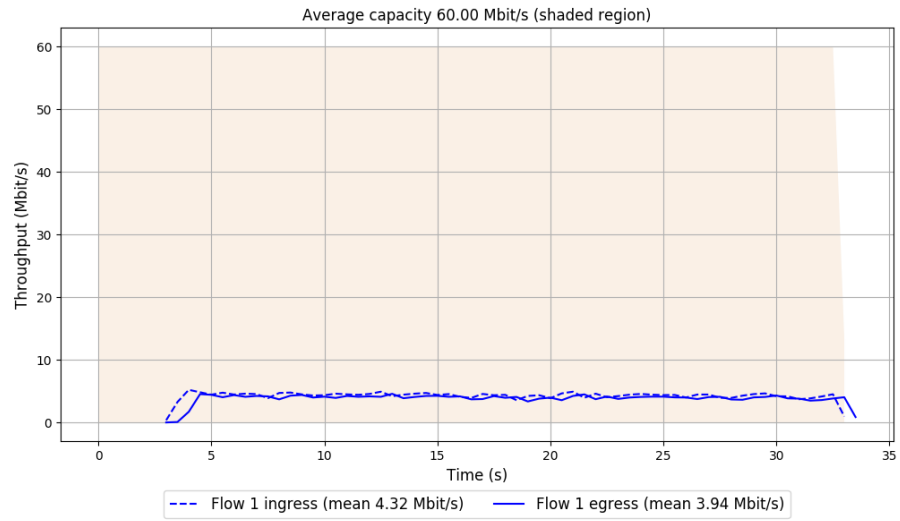
-- Flow 1:

Average throughput: 3.94 Mbit/s

95th percentile per-packet one-way delay: 12.189 ms

Loss rate: 8.71%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2019-01-17 06:30:59

End at: 2019-01-17 06:31:29

Below is generated by plot.py at 2019-01-17 06:58:49

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 3.88 Mbit/s (6.5% utilization)

95th percentile per-packet one-way delay: 12.206 ms

Loss rate: 8.95%

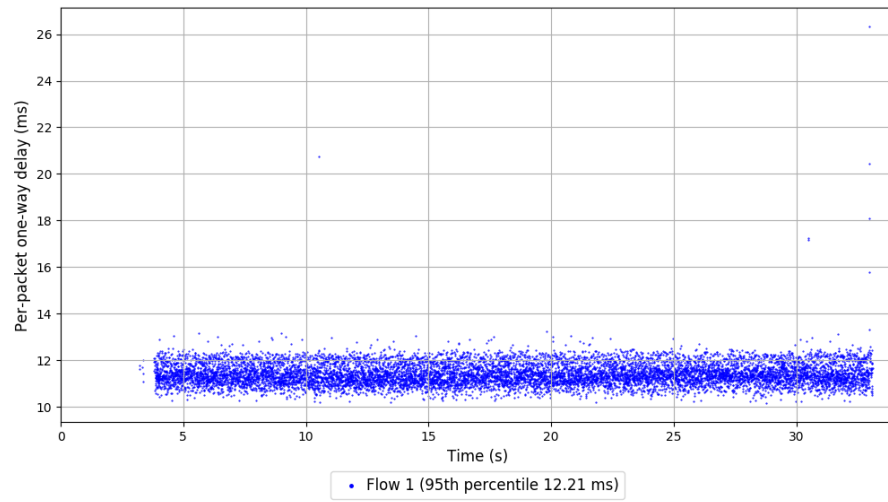
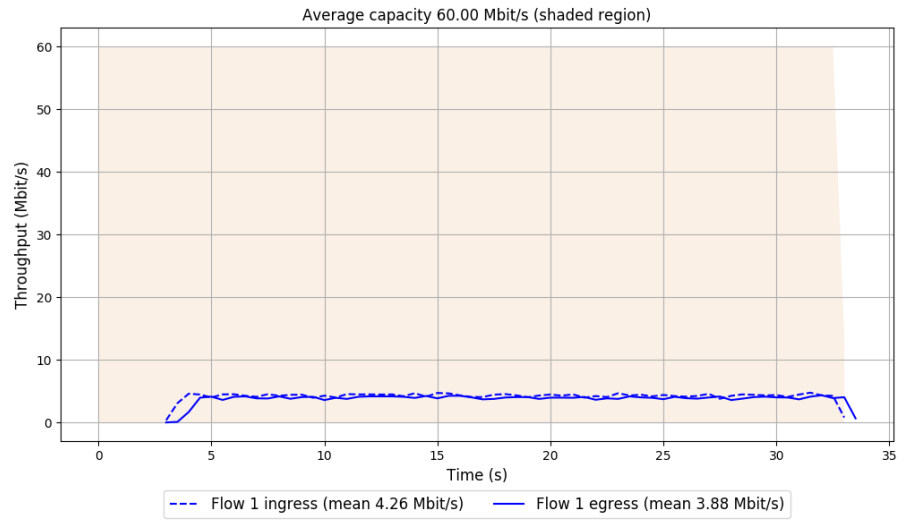
-- Flow 1:

Average throughput: 3.88 Mbit/s

95th percentile per-packet one-way delay: 12.206 ms

Loss rate: 8.95%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2019-01-17 06:43:39

End at: 2019-01-17 06:44:09

Below is generated by plot.py at 2019-01-17 06:58:49

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 3.90 Mbit/s (6.5% utilization)

95th percentile per-packet one-way delay: 12.196 ms

Loss rate: 8.99%

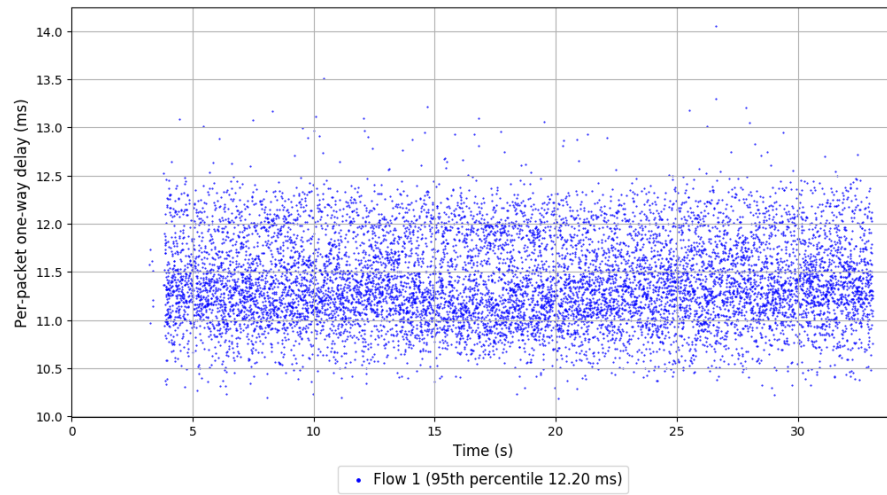
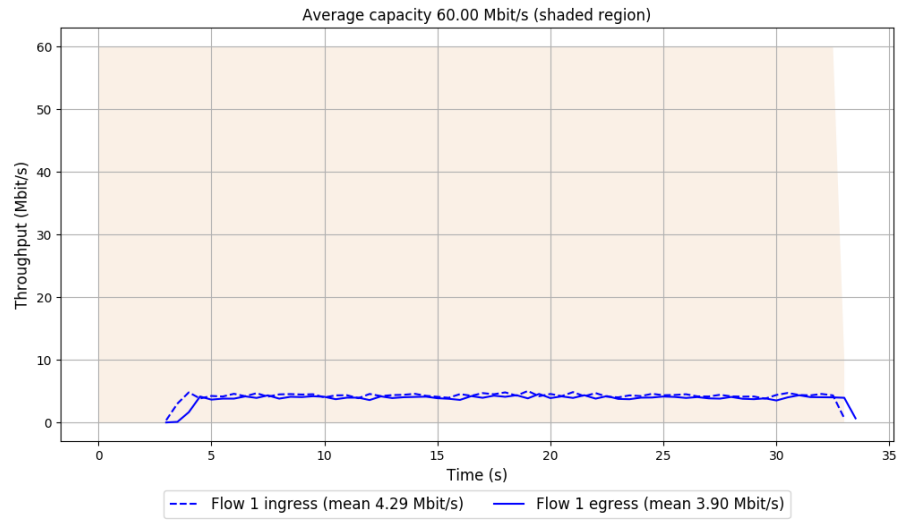
-- Flow 1:

Average throughput: 3.90 Mbit/s

95th percentile per-packet one-way delay: 12.196 ms

Loss rate: 8.99%

Run 3: Report of QUIC Cubic — Data Link



Run 1: Statistics of SCReAM

Start at: 2019-01-17 06:18:57

End at: 2019-01-17 06:19:27

Below is generated by plot.py at 2019-01-17 06:58:49

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.21 Mbit/s (0.4% utilization)

95th percentile per-packet one-way delay: 11.850 ms

Loss rate: 0.13%

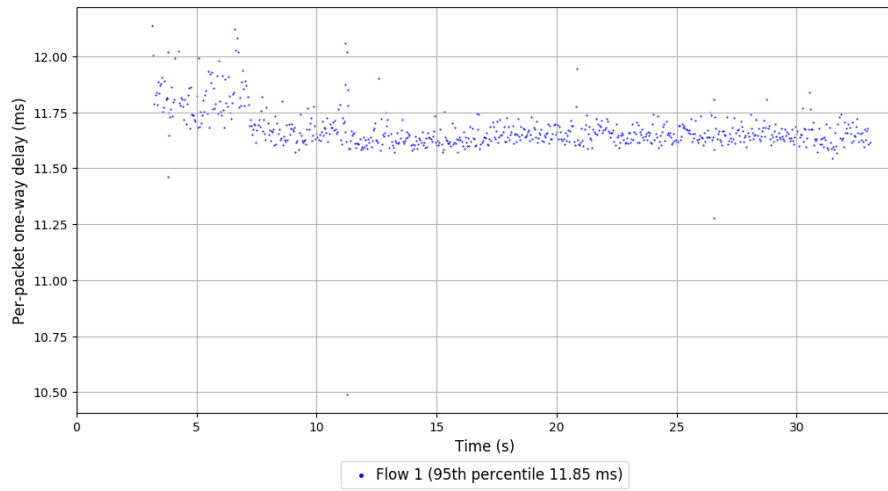
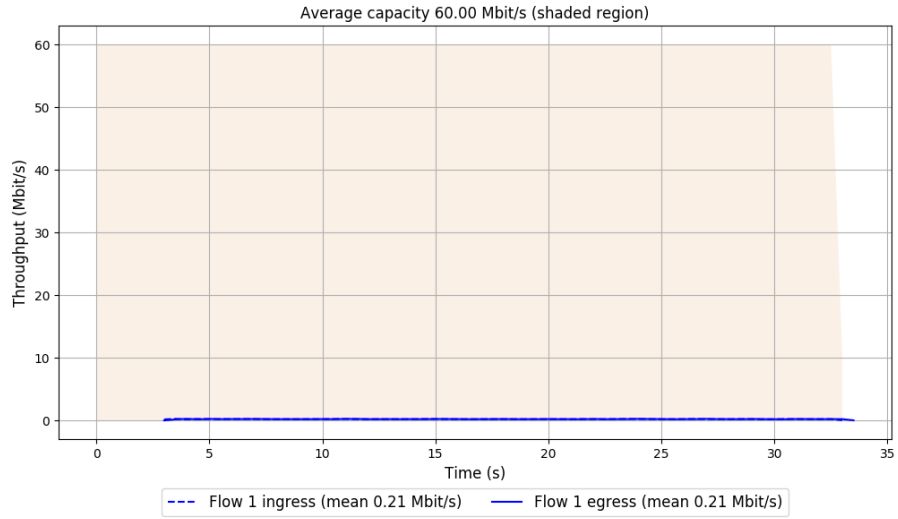
-- Flow 1:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 11.850 ms

Loss rate: 0.13%

Run 1: Report of SCReAM — Data Link



Run 2: Statistics of SCReAM

Start at: 2019-01-17 06:31:35

End at: 2019-01-17 06:32:05

Below is generated by plot.py at 2019-01-17 06:58:49

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.21 Mbit/s (0.4% utilization)

95th percentile per-packet one-way delay: 11.747 ms

Loss rate: 0.00%

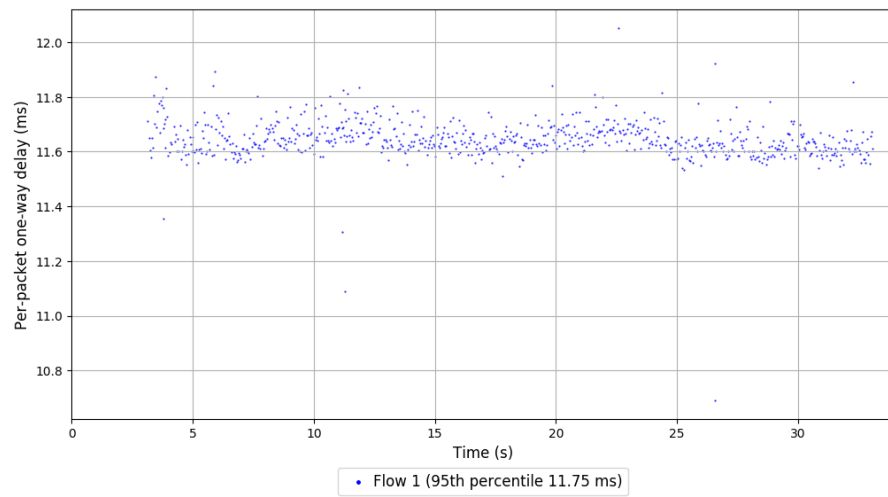
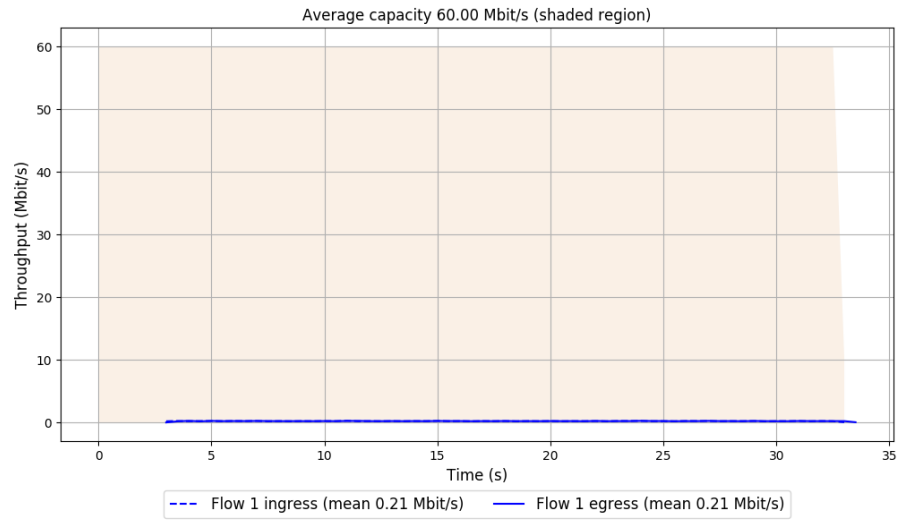
-- Flow 1:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 11.747 ms

Loss rate: 0.00%

Run 2: Report of SReAM — Data Link



Run 3: Statistics of SCReAM

Start at: 2019-01-17 06:44:15

End at: 2019-01-17 06:44:45

Below is generated by plot.py at 2019-01-17 06:58:49

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.21 Mbit/s (0.4% utilization)

95th percentile per-packet one-way delay: 11.893 ms

Loss rate: 0.00%

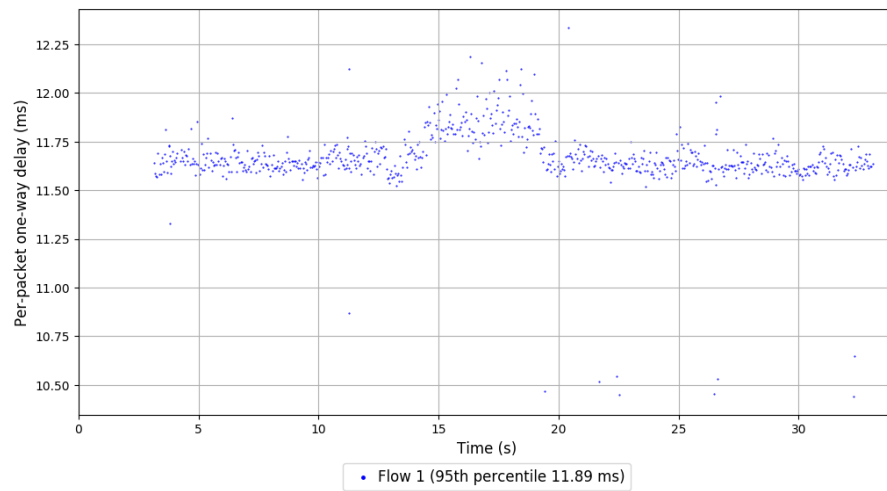
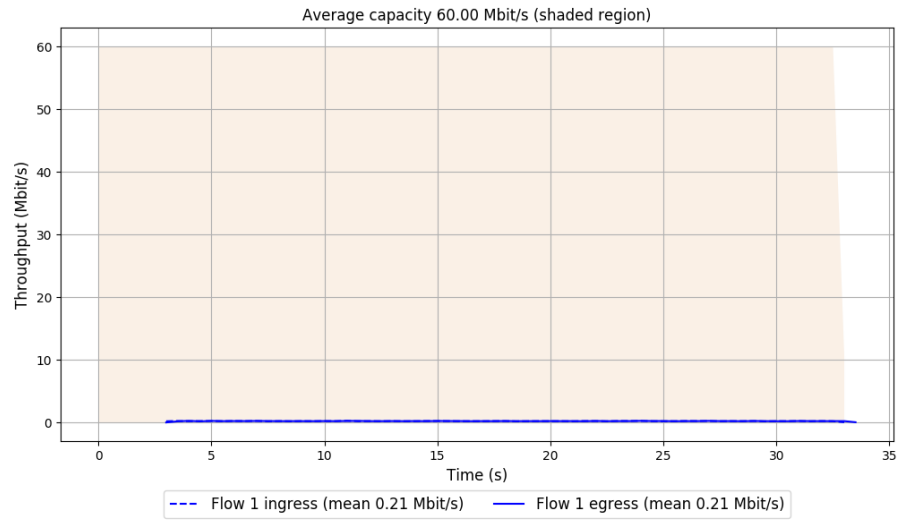
-- Flow 1:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 11.893 ms

Loss rate: 0.00%

Run 3: Report of SCReAM — Data Link



Run 1: Statistics of Sprout

Start at: 2019-01-17 06:24:19

End at: 2019-01-17 06:24:49

Below is generated by plot.py at 2019-01-17 06:58:49

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.47 Mbit/s (0.8% utilization)

95th percentile per-packet one-way delay: 11.851 ms

Loss rate: 9.33%

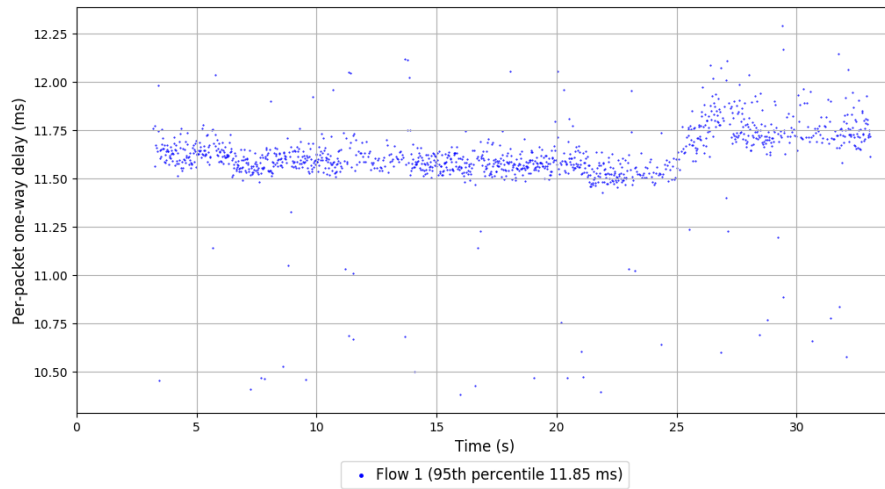
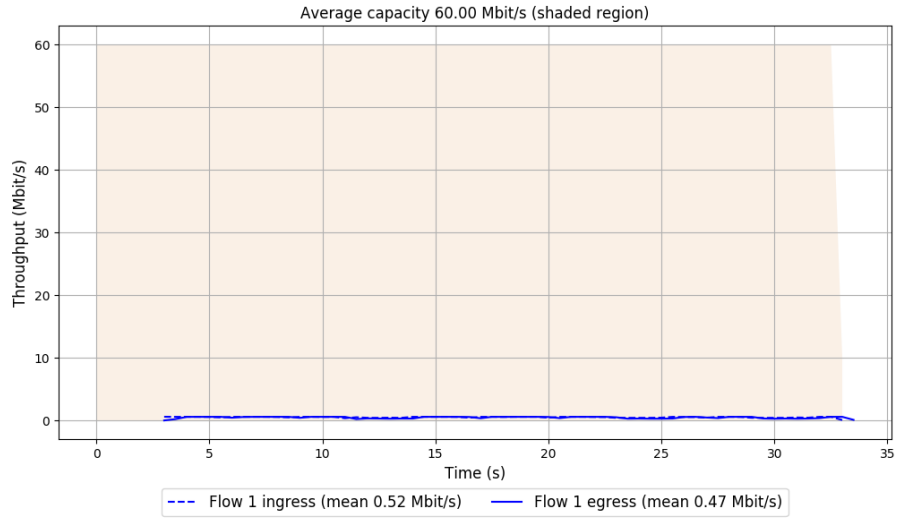
-- Flow 1:

Average throughput: 0.47 Mbit/s

95th percentile per-packet one-way delay: 11.851 ms

Loss rate: 9.33%

Run 1: Report of Sprout — Data Link



Run 2: Statistics of Sprout

Start at: 2019-01-17 06:36:57

End at: 2019-01-17 06:37:27

Below is generated by plot.py at 2019-01-17 06:58:49

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.48 Mbit/s (0.8% utilization)

95th percentile per-packet one-way delay: 11.689 ms

Loss rate: 8.58%

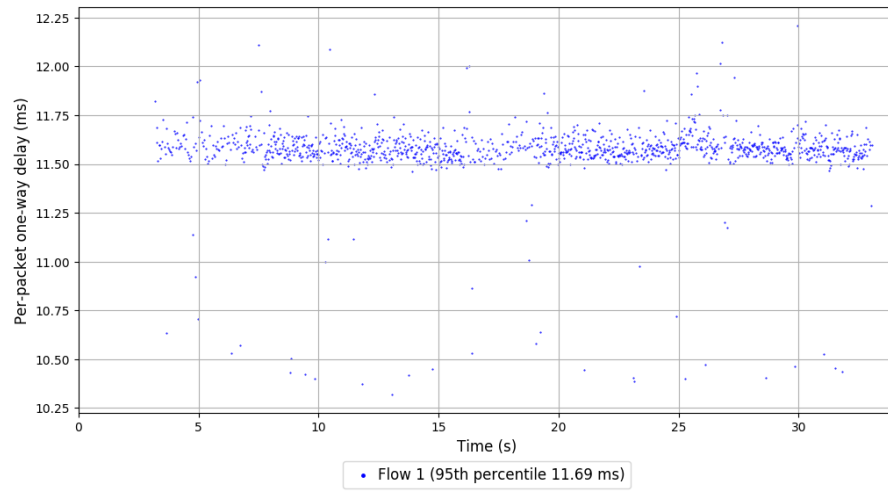
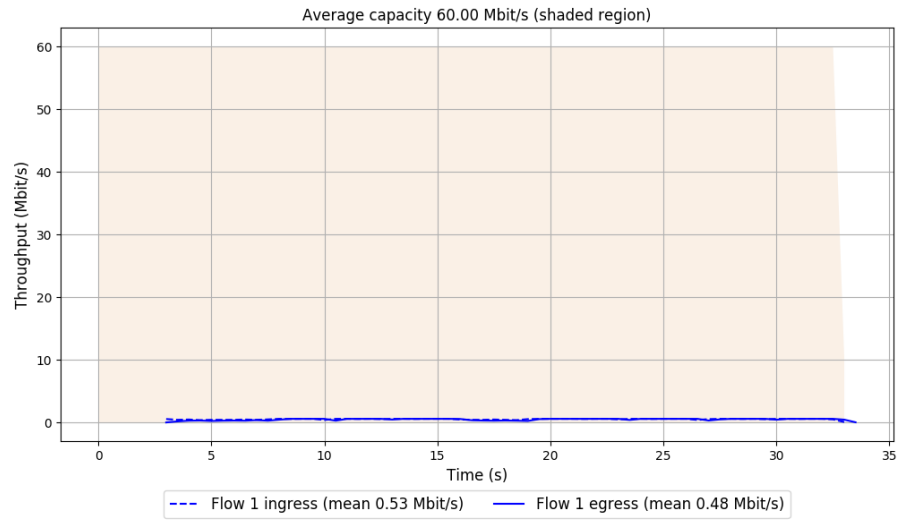
-- Flow 1:

Average throughput: 0.48 Mbit/s

95th percentile per-packet one-way delay: 11.689 ms

Loss rate: 8.58%

Run 2: Report of Sprout — Data Link



Run 3: Statistics of Sprout

Start at: 2019-01-17 06:49:37

End at: 2019-01-17 06:50:07

Below is generated by plot.py at 2019-01-17 06:58:49

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.50 Mbit/s (0.8% utilization)

95th percentile per-packet one-way delay: 11.666 ms

Loss rate: 6.85%

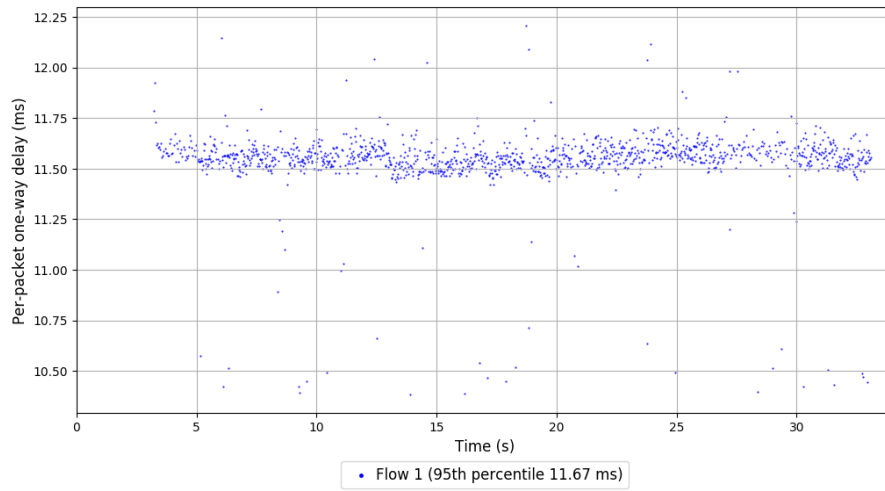
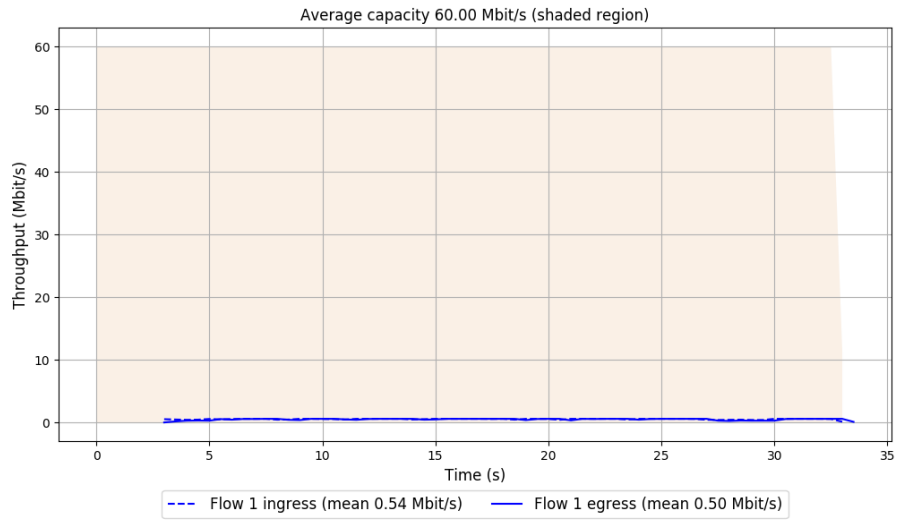
-- Flow 1:

Average throughput: 0.50 Mbit/s

95th percentile per-packet one-way delay: 11.666 ms

Loss rate: 6.85%

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: 2019-01-17 06:26:43

End at: 2019-01-17 06:27:13

Below is generated by plot.py at 2019-01-17 06:58:49

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.01 Mbit/s (0.0% utilization)

95th percentile per-packet one-way delay: 11.711 ms

Loss rate: 51.91%

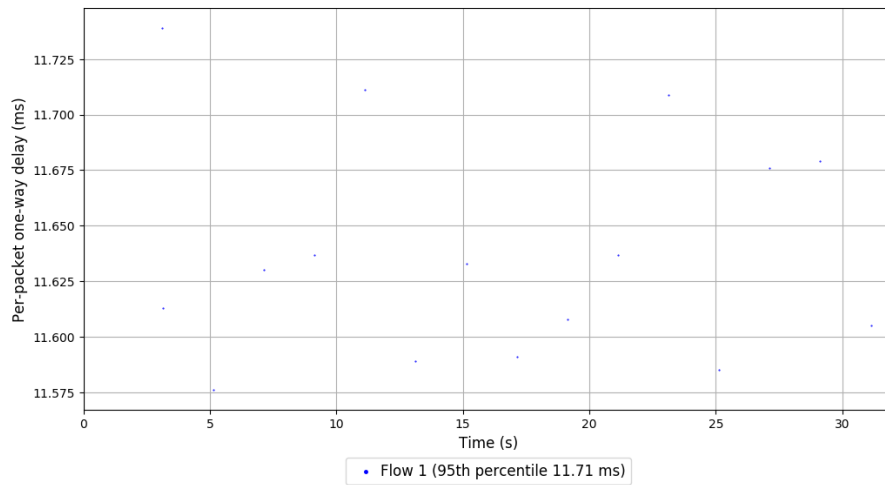
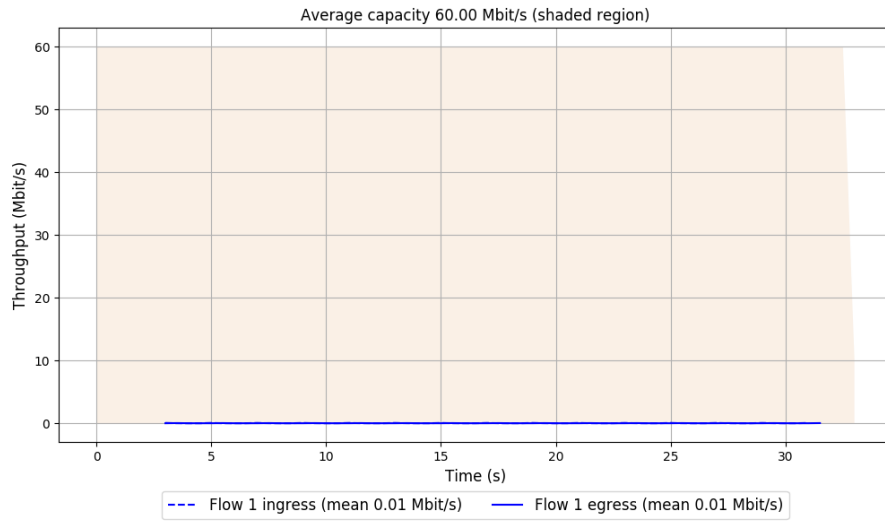
-- Flow 1:

Average throughput: 0.01 Mbit/s

95th percentile per-packet one-way delay: 11.711 ms

Loss rate: 51.91%

Run 1: Report of TaoVA-100x — Data Link



Run 2: Statistics of TaoVA-100x

Start at: 2019-01-17 06:39:21

End at: 2019-01-17 06:39:51

Below is generated by plot.py at 2019-01-17 06:58:49

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.01 Mbit/s (0.0% utilization)

95th percentile per-packet one-way delay: 11.839 ms

Loss rate: 51.91%

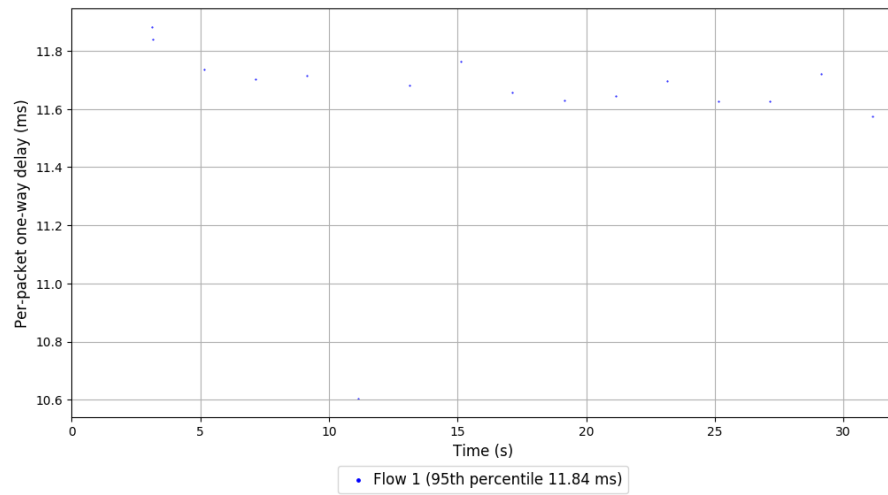
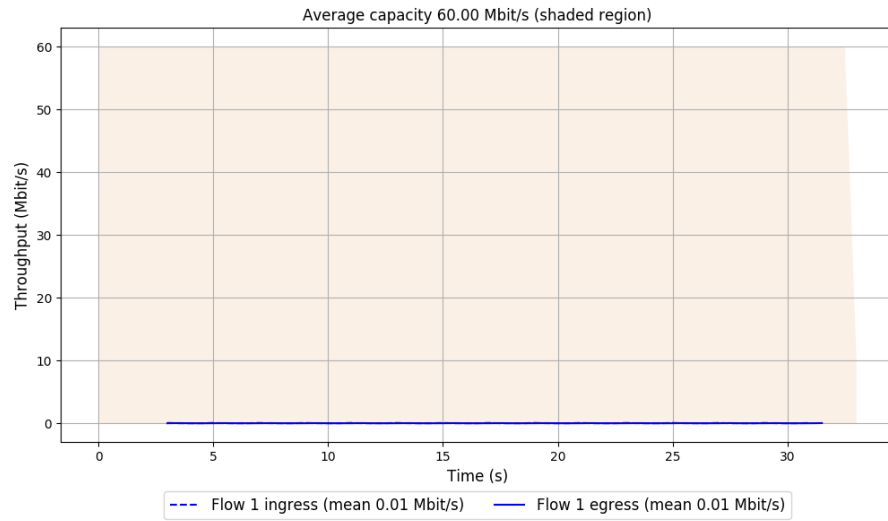
-- Flow 1:

Average throughput: 0.01 Mbit/s

95th percentile per-packet one-way delay: 11.839 ms

Loss rate: 51.91%

Run 2: Report of TaoVA-100x — Data Link



Run 3: Statistics of TaoVA-100x

Start at: 2019-01-17 06:52:00

End at: 2019-01-17 06:52:30

Below is generated by plot.py at 2019-01-17 06:58:49

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.01 Mbit/s (0.0% utilization)

95th percentile per-packet one-way delay: 11.884 ms

Loss rate: 63.67%

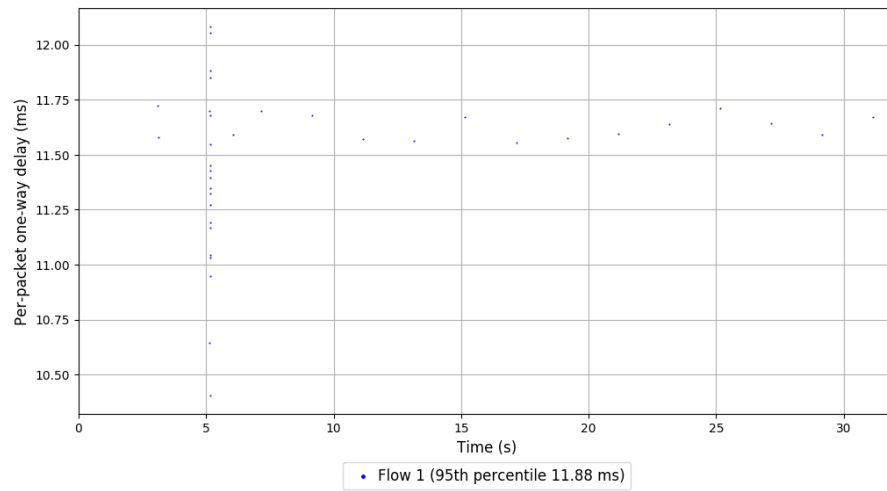
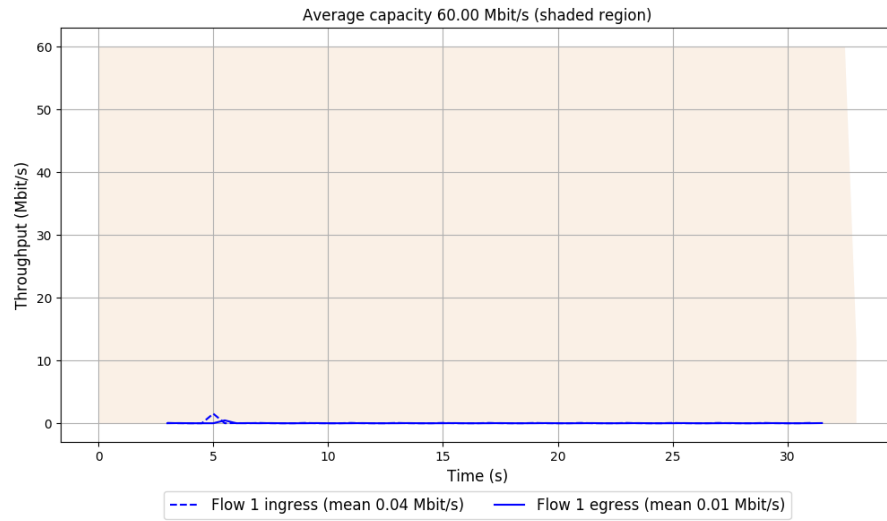
-- Flow 1:

Average throughput: 0.01 Mbit/s

95th percentile per-packet one-way delay: 11.884 ms

Loss rate: 63.67%

Run 3: Report of TaoVA-100x — Data Link



Run 1: Statistics of TCP Vegas

Start at: 2019-01-17 06:29:48

End at: 2019-01-17 06:30:18

Below is generated by plot.py at 2019-01-17 06:58:49

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.82 Mbit/s (1.4% utilization)

95th percentile per-packet one-way delay: 12.065 ms

Loss rate: 16.37%

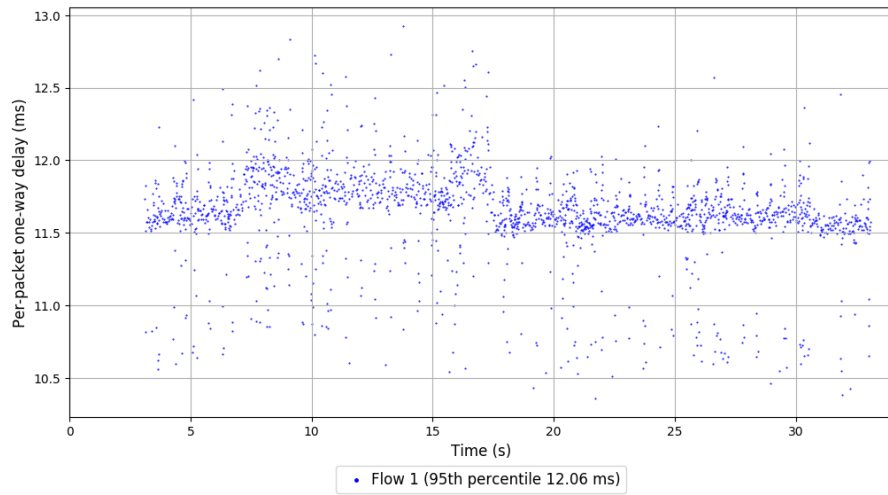
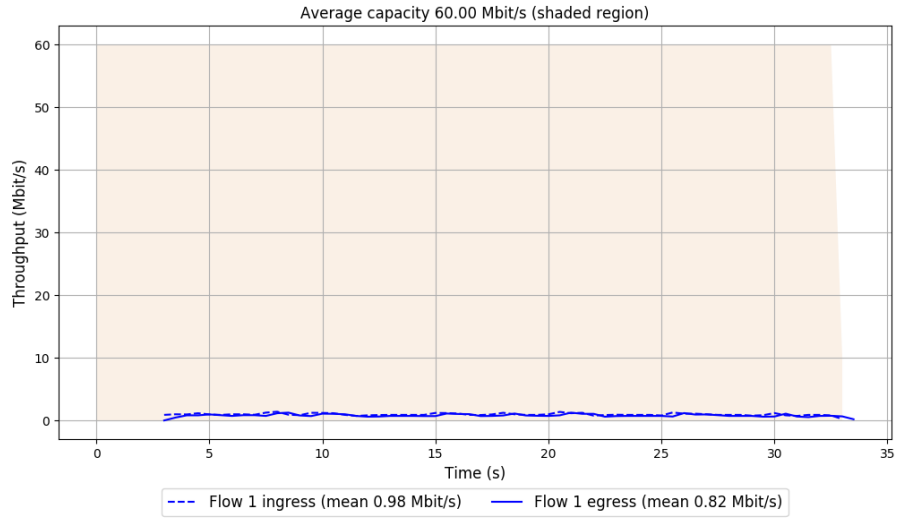
-- Flow 1:

Average throughput: 0.82 Mbit/s

95th percentile per-packet one-way delay: 12.065 ms

Loss rate: 16.37%

Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2019-01-17 06:42:27

End at: 2019-01-17 06:42:57

Below is generated by plot.py at 2019-01-17 06:58:49

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.82 Mbit/s (1.4% utilization)

95th percentile per-packet one-way delay: 11.888 ms

Loss rate: 16.20%

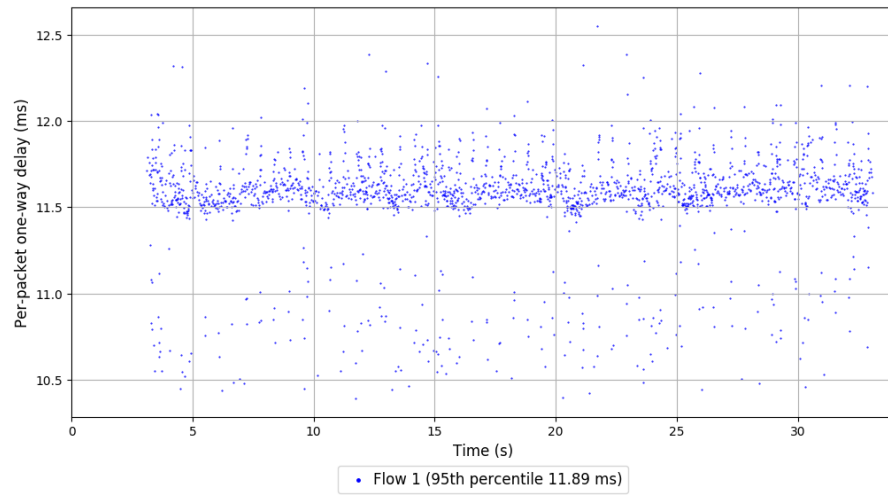
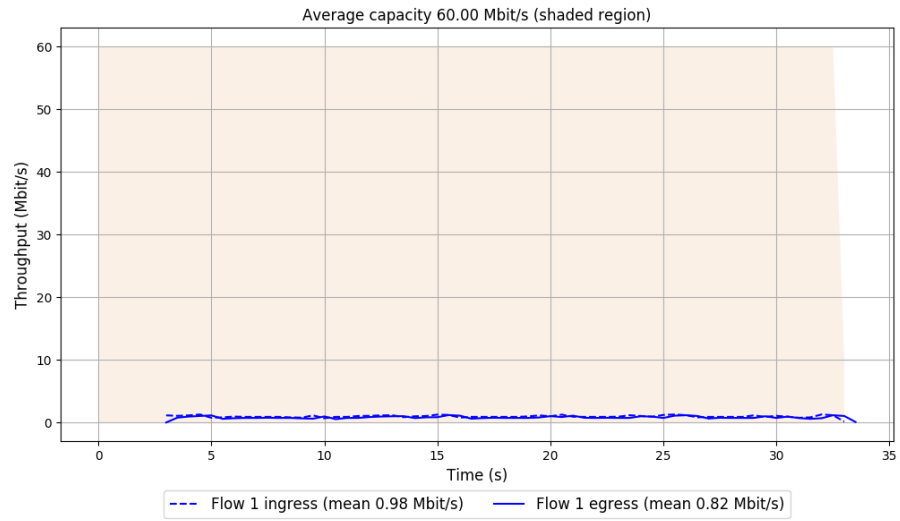
-- Flow 1:

Average throughput: 0.82 Mbit/s

95th percentile per-packet one-way delay: 11.888 ms

Loss rate: 16.20%

Run 2: Report of TCP Vegas — Data Link



Run 3: Statistics of TCP Vegas

Start at: 2019-01-17 06:55:04

End at: 2019-01-17 06:55:34

Below is generated by plot.py at 2019-01-17 06:58:49

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.81 Mbit/s (1.4% utilization)

95th percentile per-packet one-way delay: 11.780 ms

Loss rate: 16.64%

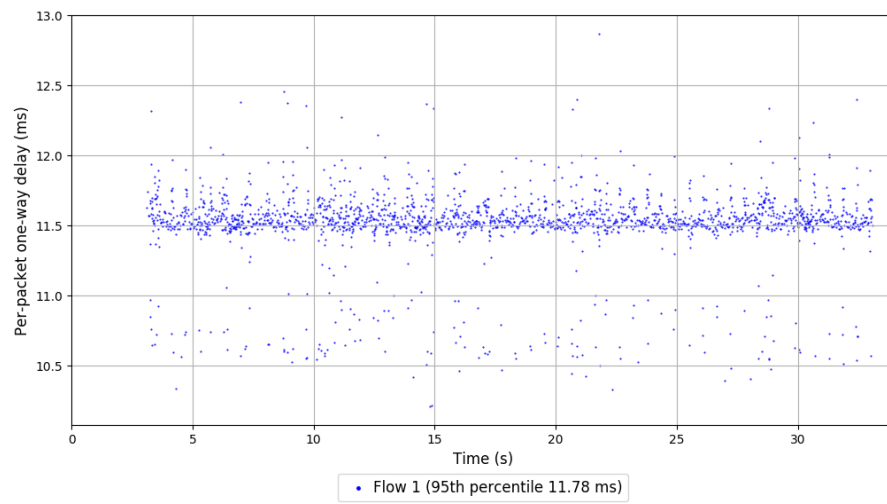
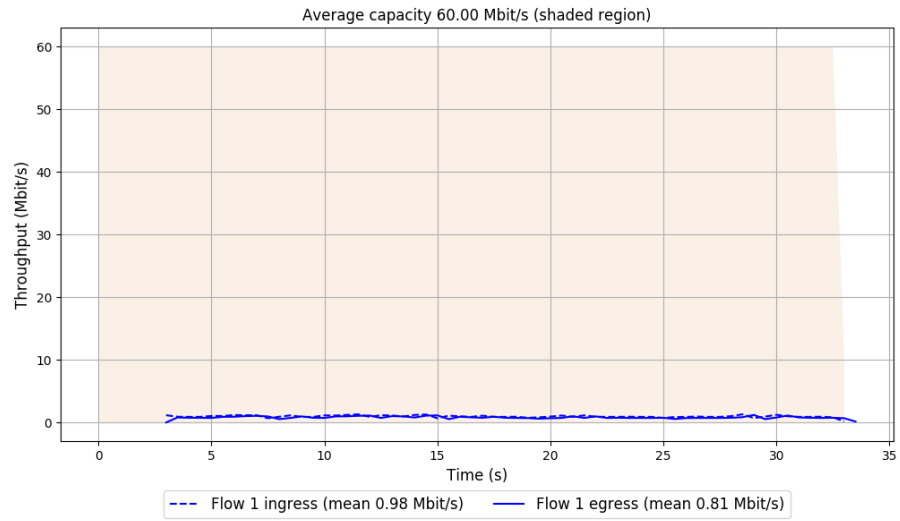
-- Flow 1:

Average throughput: 0.81 Mbit/s

95th percentile per-packet one-way delay: 11.780 ms

Loss rate: 16.64%

Run 3: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2019-01-17 06:29:10

End at: 2019-01-17 06:29:40

Below is generated by plot.py at 2019-01-17 06:59:10

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 2.47 Mbit/s (4.1% utilization)

95th percentile per-packet one-way delay: 12.281 ms

Loss rate: 98.23%

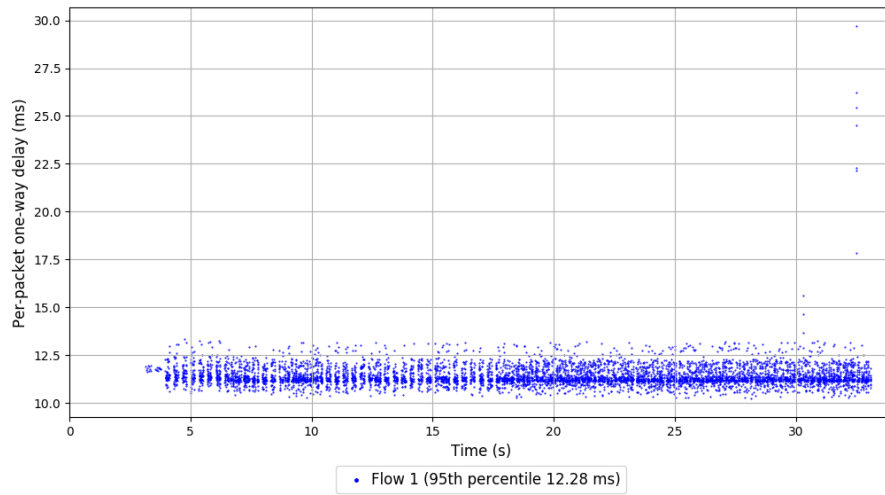
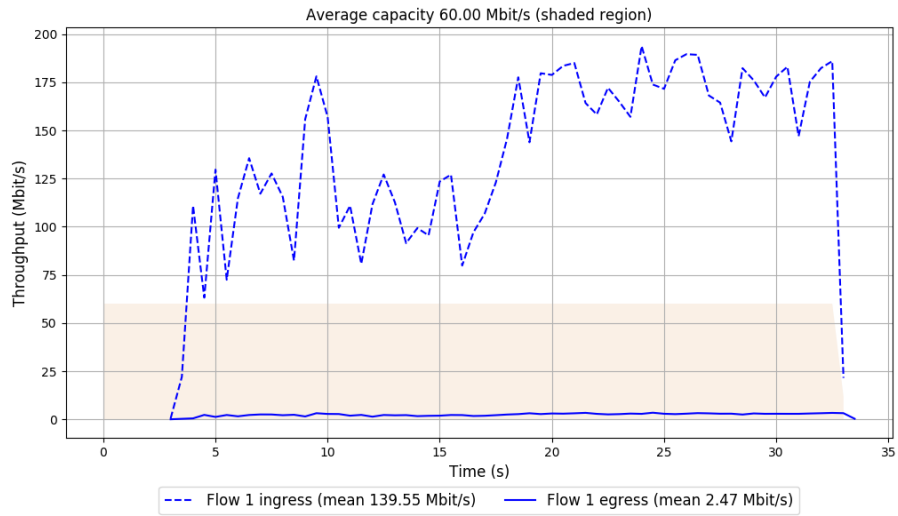
-- Flow 1:

Average throughput: 2.47 Mbit/s

95th percentile per-packet one-way delay: 12.281 ms

Loss rate: 98.23%

Run 1: Report of Verus — Data Link



Run 2: Statistics of Verus

Start at: 2019-01-17 06:41:48

End at: 2019-01-17 06:42:18

Below is generated by plot.py at 2019-01-17 06:59:13

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 3.04 Mbit/s (5.1% utilization)

95th percentile per-packet one-way delay: 12.146 ms

Loss rate: 98.65%

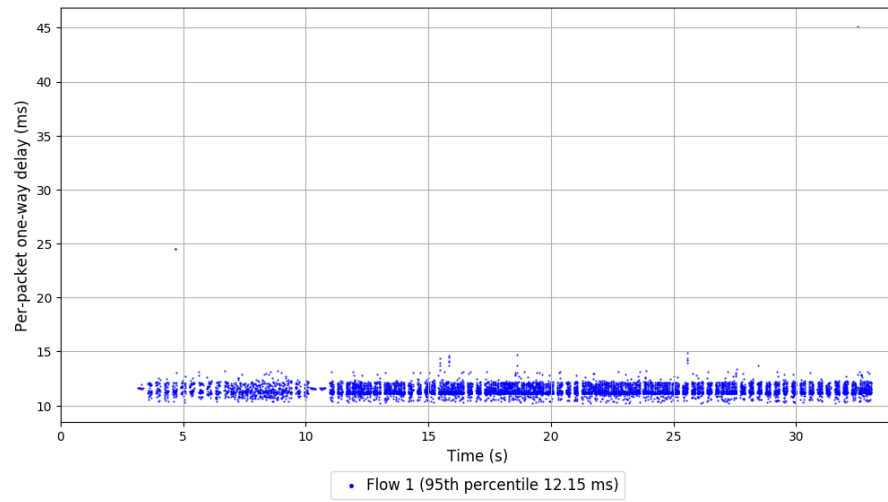
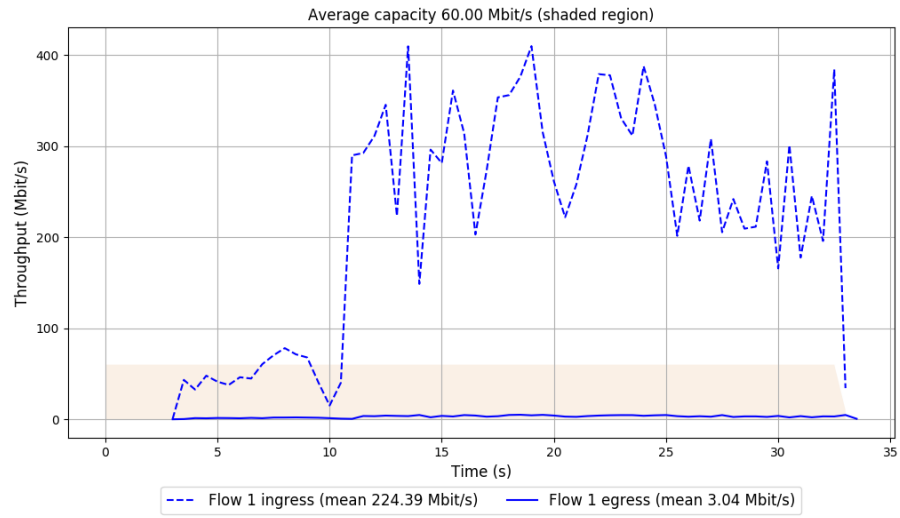
-- Flow 1:

Average throughput: 3.04 Mbit/s

95th percentile per-packet one-way delay: 12.146 ms

Loss rate: 98.65%

Run 2: Report of Verus — Data Link



Run 3: Statistics of Verus

Start at: 2019-01-17 06:54:25

End at: 2019-01-17 06:54:55

Below is generated by plot.py at 2019-01-17 06:59:13

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 2.47 Mbit/s (4.1% utilization)

95th percentile per-packet one-way delay: 12.240 ms

Loss rate: 98.39%

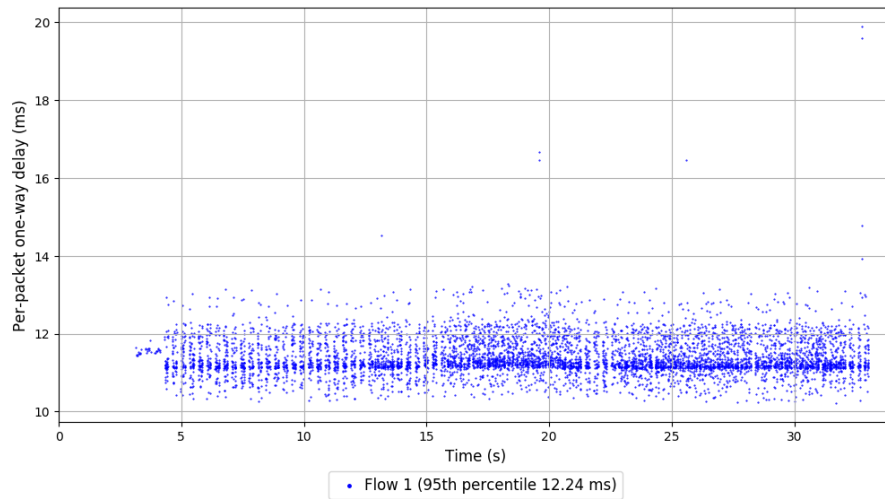
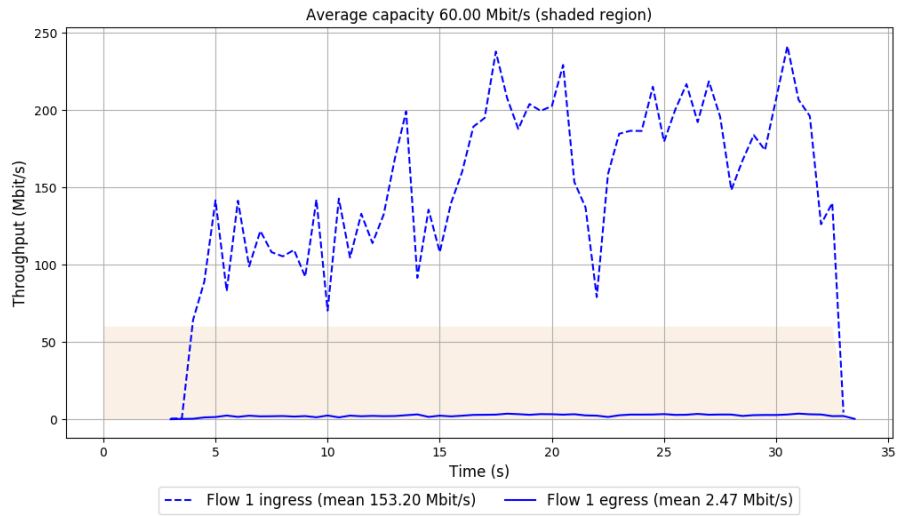
-- Flow 1:

Average throughput: 2.47 Mbit/s

95th percentile per-packet one-way delay: 12.240 ms

Loss rate: 98.39%

Run 3: Report of Verus — Data Link



Run 1: Statistics of PCC-Vivace

Start at: 2019-01-17 06:21:56

End at: 2019-01-17 06:22:26

Below is generated by plot.py at 2019-01-17 06:59:13

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 6.22 Mbit/s (10.4% utilization)

95th percentile per-packet one-way delay: 12.056 ms

Loss rate: 0.23%

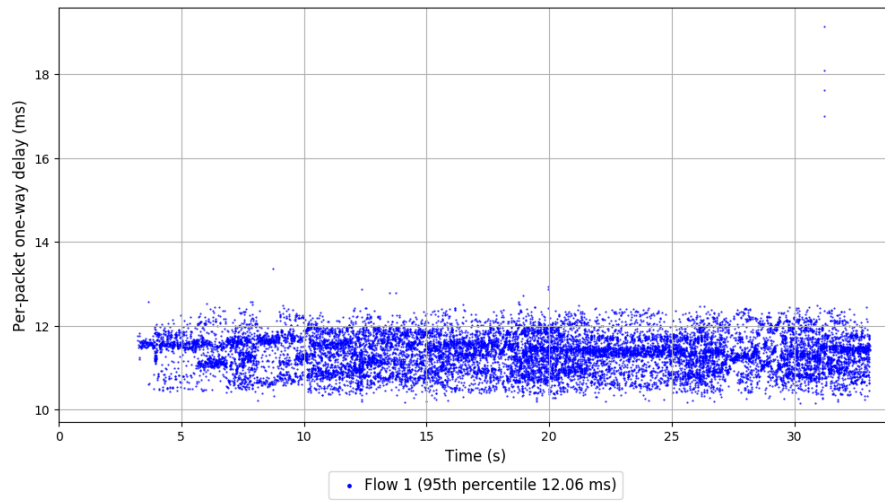
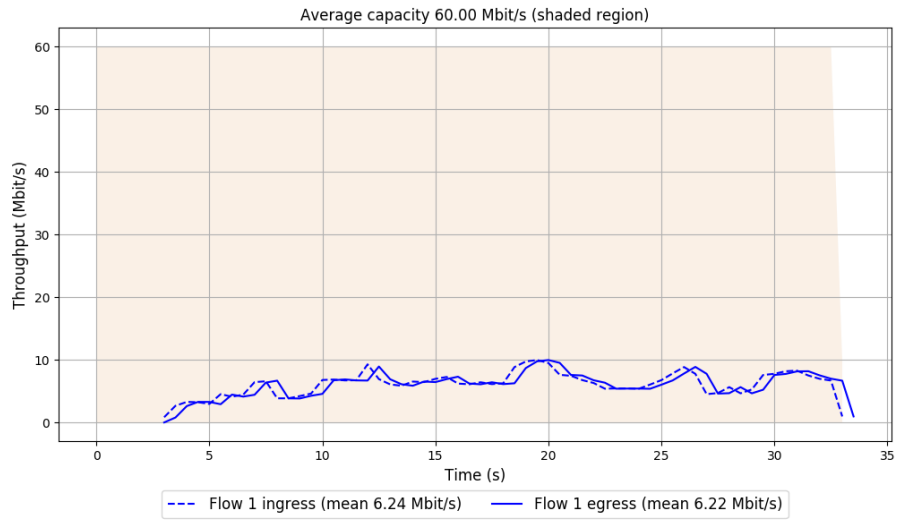
-- Flow 1:

Average throughput: 6.22 Mbit/s

95th percentile per-packet one-way delay: 12.056 ms

Loss rate: 0.23%

Run 1: Report of PCC-Vivace — Data Link



Run 2: Statistics of PCC-Vivace

Start at: 2019-01-17 06:34:34

End at: 2019-01-17 06:35:04

Below is generated by plot.py at 2019-01-17 06:59:13

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 5.43 Mbit/s (9.1% utilization)

95th percentile per-packet one-way delay: 12.072 ms

Loss rate: 0.20%

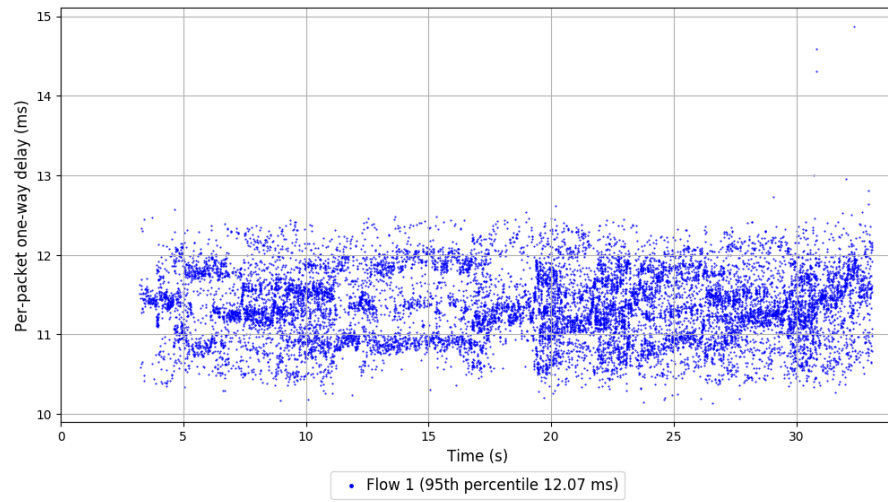
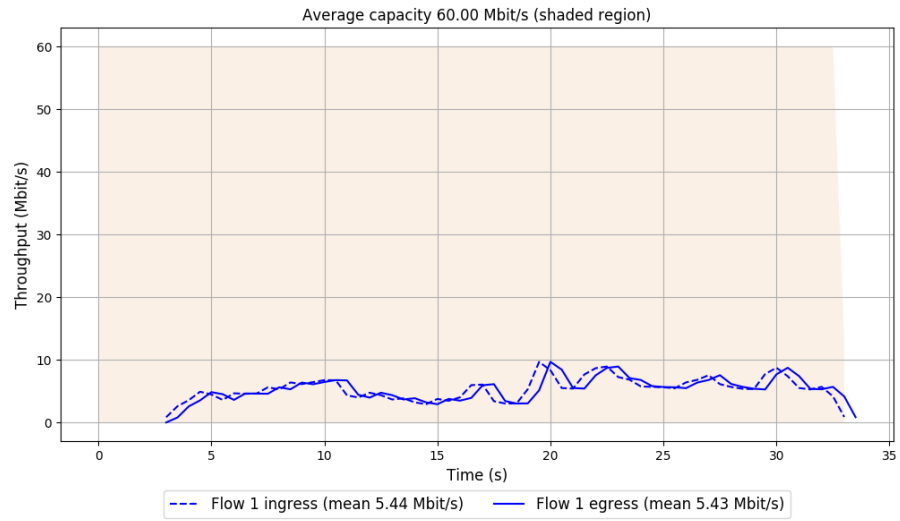
-- Flow 1:

Average throughput: 5.43 Mbit/s

95th percentile per-packet one-way delay: 12.072 ms

Loss rate: 0.20%

Run 2: Report of PCC-Vivace — Data Link



Run 3: Statistics of PCC-Vivace

Start at: 2019-01-17 06:47:13

End at: 2019-01-17 06:47:43

Below is generated by plot.py at 2019-01-17 06:59:13

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 6.03 Mbit/s (10.1% utilization)

95th percentile per-packet one-way delay: 12.081 ms

Loss rate: 1.17%

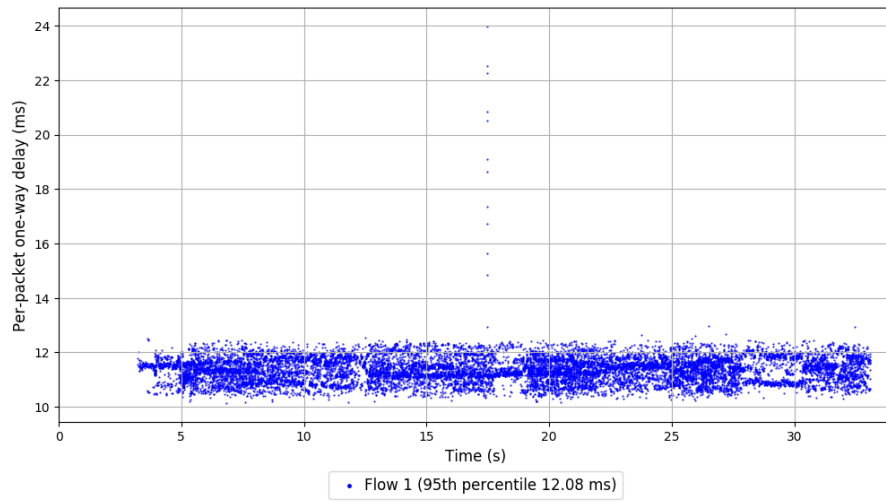
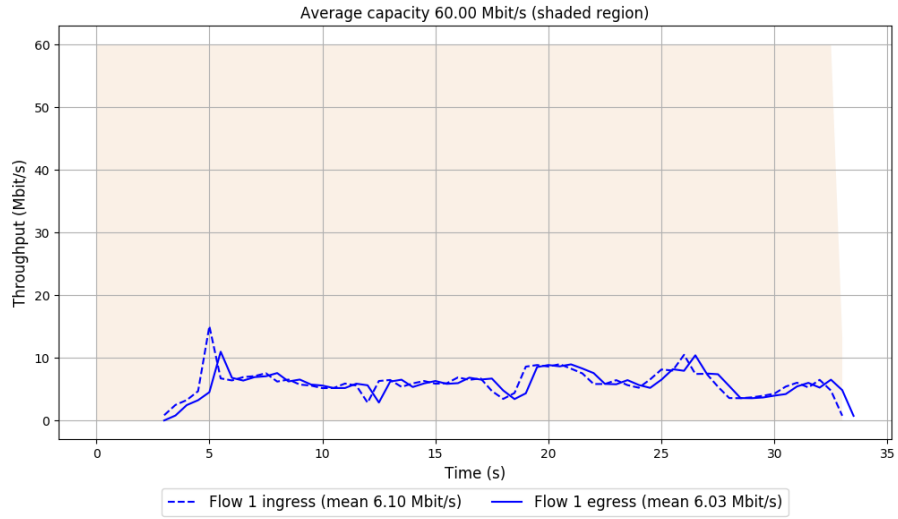
-- Flow 1:

Average throughput: 6.03 Mbit/s

95th percentile per-packet one-way delay: 12.081 ms

Loss rate: 1.17%

Run 3: Report of PCC-Vivace — Data Link



Run 1: Statistics of WebRTC media

Start at: 2019-01-17 06:21:20

End at: 2019-01-17 06:21:50

Below is generated by plot.py at 2019-01-17 06:59:13

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.05 Mbit/s (0.1% utilization)

95th percentile per-packet one-way delay: 12.078 ms

Loss rate: 24.99%

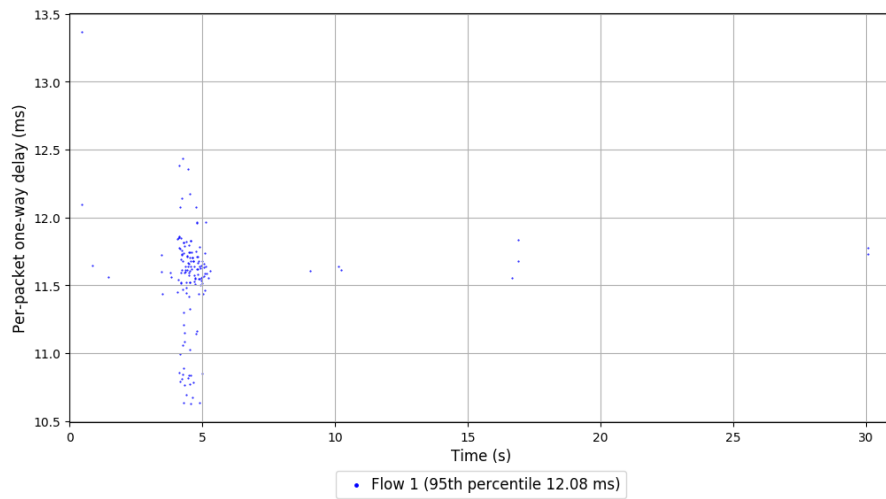
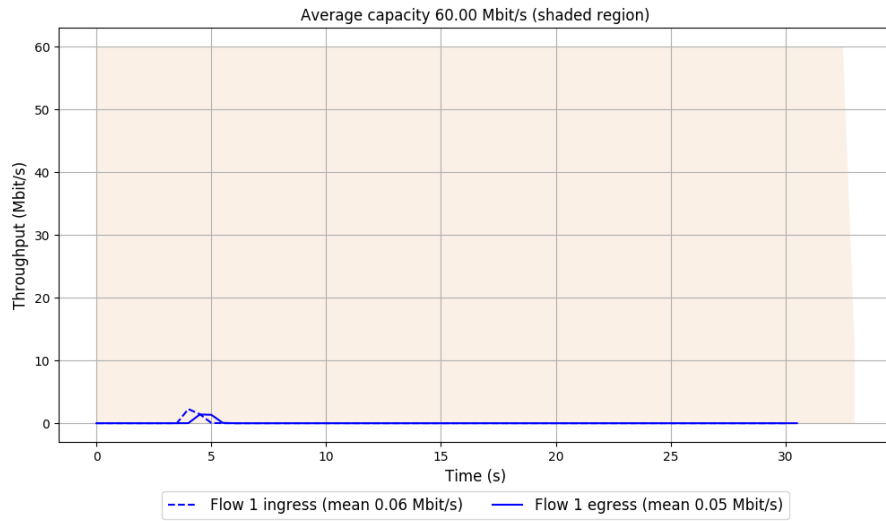
-- Flow 1:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 12.078 ms

Loss rate: 24.99%

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2019-01-17 06:33:58

End at: 2019-01-17 06:34:28

Below is generated by plot.py at 2019-01-17 06:59:13

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.05 Mbit/s (0.1% utilization)

95th percentile per-packet one-way delay: 11.745 ms

Loss rate: 24.30%

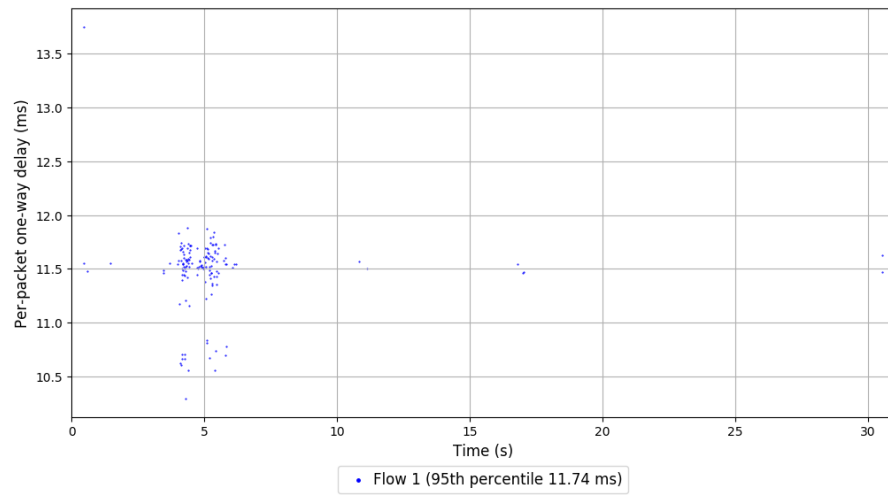
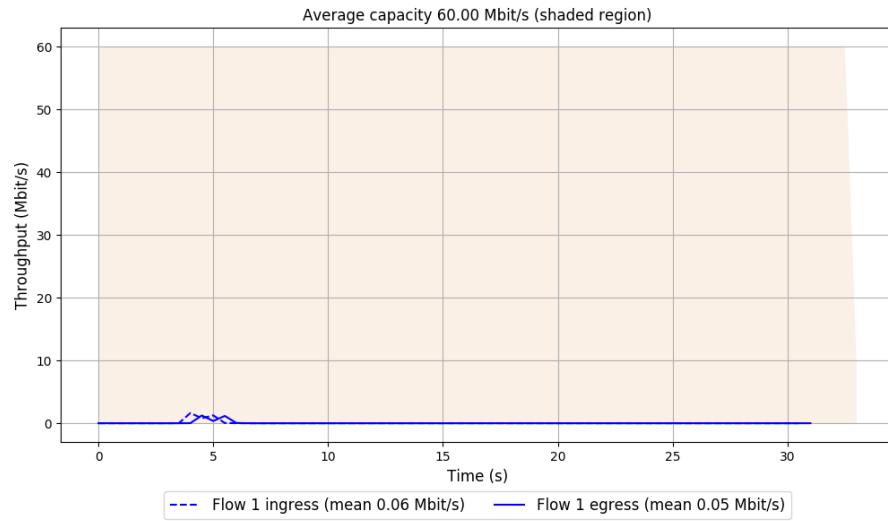
-- Flow 1:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 11.745 ms

Loss rate: 24.30%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2019-01-17 06:46:38

End at: 2019-01-17 06:47:08

Below is generated by plot.py at 2019-01-17 06:59:13

Datalink statistics

-- Total of 1 flow:

Average capacity: 60.00 Mbit/s

Average throughput: 0.05 Mbit/s (0.1% utilization)

95th percentile per-packet one-way delay: 12.056 ms

Loss rate: 27.23%

-- Flow 1:

Average throughput: 0.05 Mbit/s

95th percentile per-packet one-way delay: 12.056 ms

Loss rate: 27.23%

Run 3: Report of WebRTC media — Data Link

