Pantheon Report

Generated at 2018-01-31 11:51:24 (UTC).

Data path: Colombia ppp0 (*remote*) →AWS Brazil 2 Ethernet (*local*).

Repeated the test of 17 congestion control schemes 3 times.

Each test lasted for 30 seconds running 3 flows with 10-second interval between two flows.

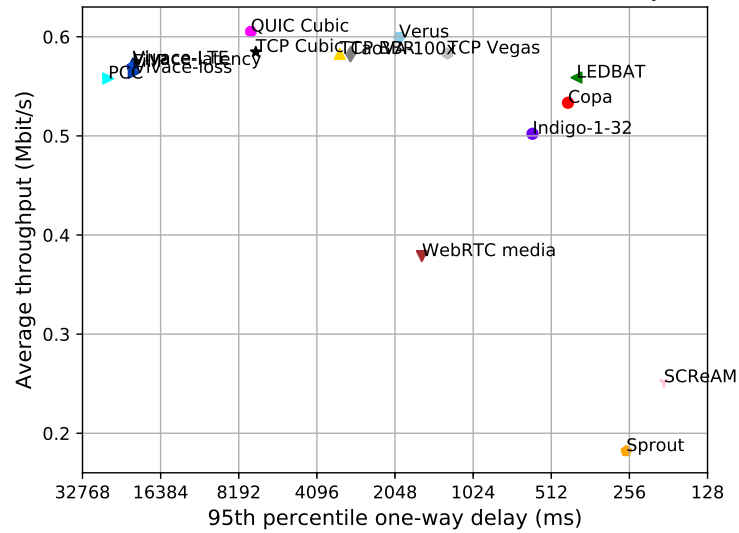Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

Tested BBR with qdisc of Fair Queuing (`fq`), and other schemes with the default Linux qdisc (`pfifo_fast`).

NTP offsets were measured against `gps.ntp.br` and have been applied to correct the timestamps in logs.

```
Git summary:
branch: master @ 70217998b3c9a7166a95460a70c0854d1326e100
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
 M datagrump/sender.cc
third_party/fillp @ fb9c9ab842e5614ad52911a76fb9bd1c1b0dca86
third_party/genericCC @ 80b516c448f795fd6e9675f7177b69c622f07da8
third_party/indigo @ a9b2060d39e4da2e8987e893e3eca2a6c7cd0ab9
third_party/indigo-1-layer-128-unit @ 3ae9e4ef4230db7484501f82ce8b377695f2f66d
third_party/indigo-1-layer-32-unit @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-1-layer-32-unit-no-calib @ 1f3a7f75b41135ed5b540c0fd3505939528e2a5f
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
 M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ fb1053193c2861da659ba9013db26744ccfcf993
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/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ f1a14bffe749737437f61b1eaeeb30b267cde681
third_party/sprout @ 6f2efe6e088d91066a9f023df375eee2665089ce
 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 @ 7a4ba531e75b4a6f66f5c4580192120401784ce3
third_party/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```
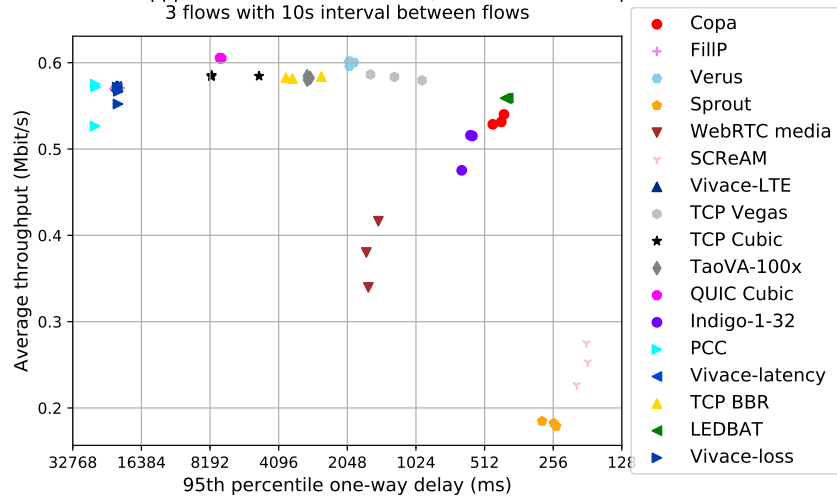
test from Colombia ppp0 to AWS Brazil 2 Ethernet, 3 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)

test from Colombia ppp0 to AWS Brazil 2 Ethernet, 3 runs of 30s each per scheme
3 flows with 10s interval between flows

scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	3	0.37	0.31	0.05	3324.88	3351.33	3144.44	6.19	9.29	48.26
TCP Cubic	3	0.55	0.07	0.00	6932.15	6074.84	7266.12	27.13	47.02	81.87
LEDBAT	3	0.26	0.35	0.23	339.69	416.32	435.91	0.10	1.20	7.75
PCC	3	0.56	0.00	N/A	26080.39	N/A	N/A	98.51	N/A	N/A
QUIC Cubic	3	0.57	0.06	0.00	7328.17	7608.10	7415.97	28.91	32.67	33.33
SCReAM	3	0.08	0.18	0.15	177.75	190.71	202.25	0.83	0.95	2.19
WebRTC media	3	0.18	0.15	0.06	1456.89	1610.84	1624.50	1.45	3.33	8.57
Sprout	3	0.09	0.09	0.09	617.77	206.80	239.16	1.05	2.11	3.68
TaoVA-100x	3	0.36	0.27	0.21	2555.66	3136.55	3275.61	4.30	17.84	24.17
TCP Vegas	3	0.39	0.22	0.18	1231.24	1278.55	1339.01	2.73	5.28	13.41
Verus	3	0.59	0.01	0.01	1976.15	1974.23	1987.74	6.62	4.92	10.00
Copa	3	0.30	0.23	0.24	415.07	455.89	458.44	4.97	6.62	11.82
FillP	3	0.57	0.00	N/A	21132.20	N/A	N/A	46.65	N/A	N/A
Indigo-1-32	3	0.27	0.21	0.29	508.93	598.84	687.78	1.45	2.25	4.51
Vivace-latency	3	0.57	0.00	N/A	21005.75	N/A	N/A	70.79	N/A	N/A
Vivace-loss	3	0.56	0.00	N/A	20780.99	N/A	N/A	88.85	N/A	N/A
Vivace-LTE	3	0.57	0.00	N/A	20977.10	N/A	N/A	70.74	N/A	N/A

```
Run 1: Statistics of TCP BBR

Start at: 2018-01-31 09:56:20
End at: 2018-01-31 09:56:50
Local clock offset: 0.222 ms
Remote clock offset: 0.811 ms


# Below is generated by plot.py at 2018-01-31 11:50:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 3564.336 ms
Loss rate: 4.98%
-- Flow 1:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 3548.290 ms
Loss rate: 3.93%
-- Flow 2:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 3564.503 ms
Loss rate: 5.14%
-- Flow 3:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 3238.055 ms
Loss rate: 51.63%
```
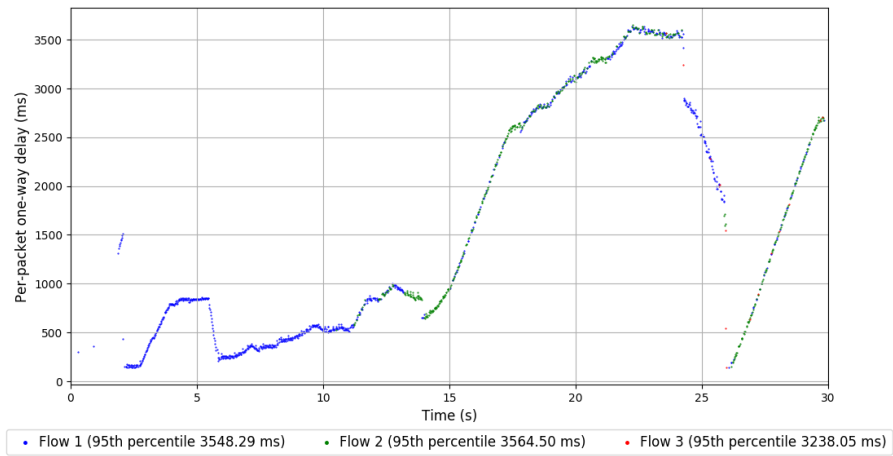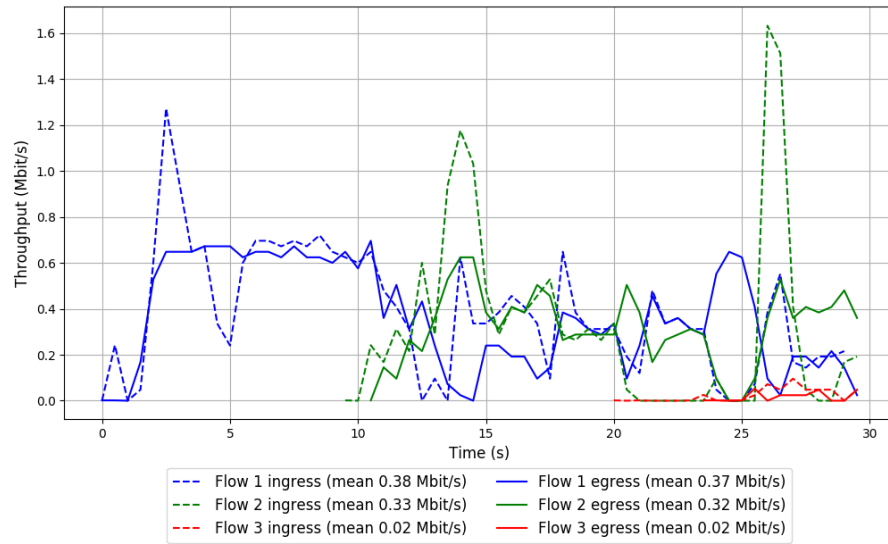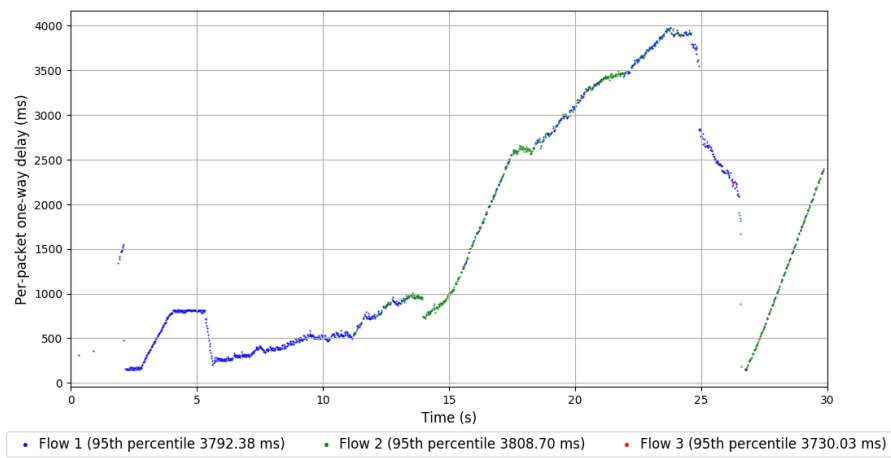
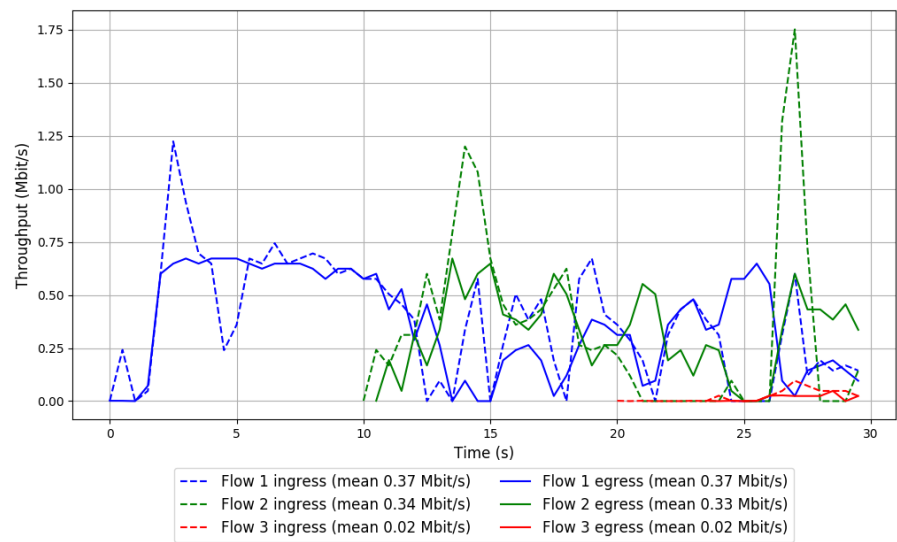Run 1: Report of TCP BBR — Data Link

5

```
Run 2: Statistics of TCP BBR

Start at: 2018-01-31 10:19:00
End at: 2018-01-31 10:19:30
Local clock offset: 0.222 ms
Remote clock offset: -5.064 ms


# Below is generated by plot.py at 2018-01-31 11:50:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 3807.030 ms
Loss rate: 5.72%
-- Flow 1:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 3792.378 ms
Loss rate: 3.64%
-- Flow 2:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 3808.703 ms
Loss rate: 7.54%
-- Flow 3:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 3730.031 ms
Loss rate: 54.44%
```
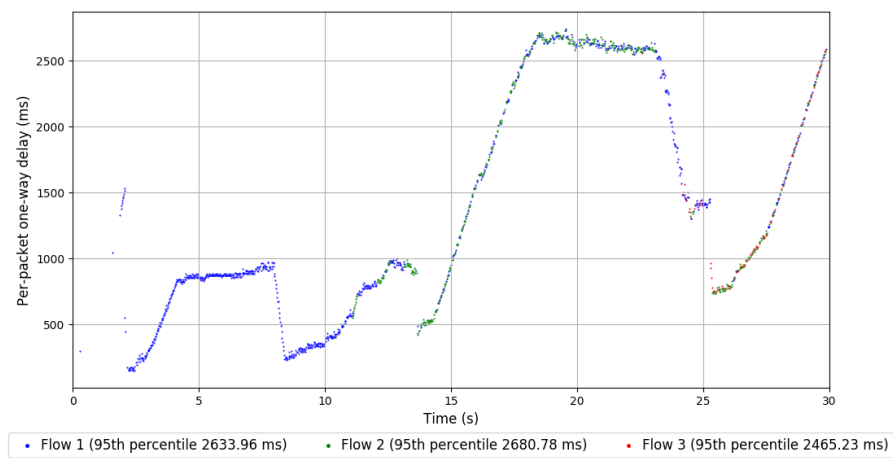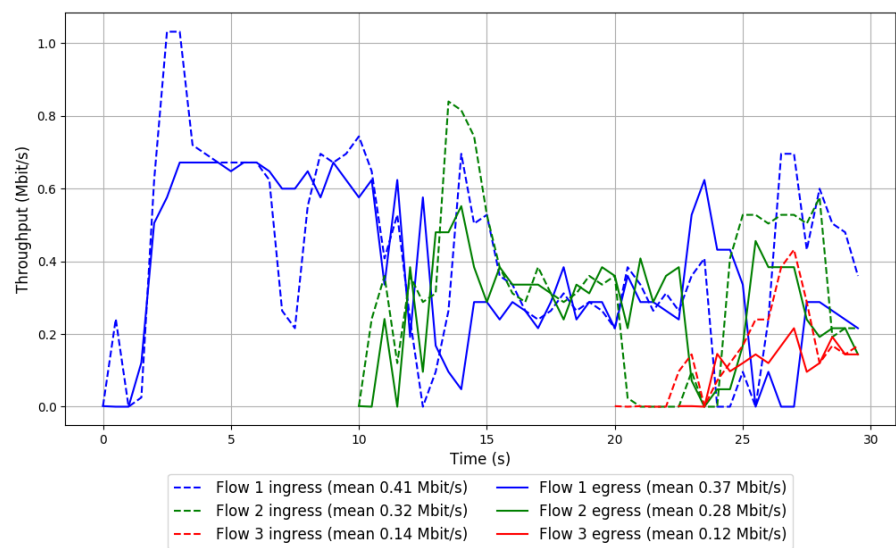
Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2018-01-31 10:41:41
End at: 2018-01-31 10:42:11
Local clock offset: 0.427 ms
Remote clock offset: -6.22 ms


# Below is generated by plot.py at 2018-01-31 11:50:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 2661.077 ms
Loss rate: 14.25%
-- Flow 1:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 2633.962 ms
Loss rate: 10.99%
-- Flow 2:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 2680.785 ms
Loss rate: 15.19%
-- Flow 3:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 2465.230 ms
Loss rate: 38.71%
```
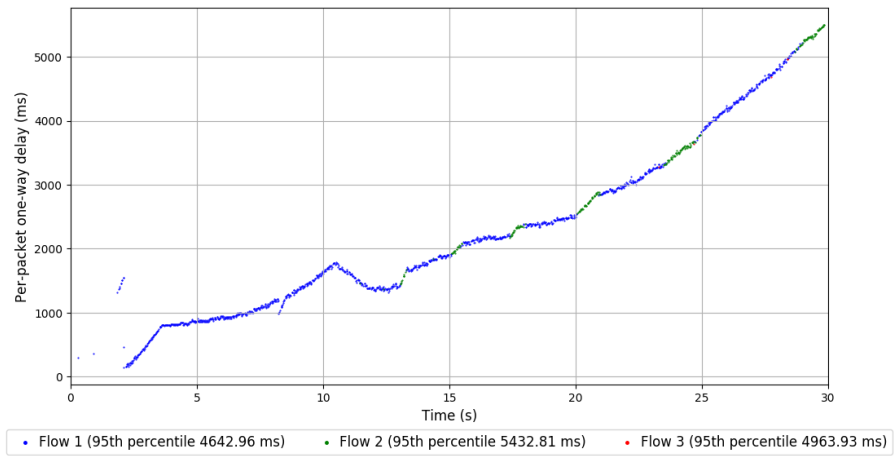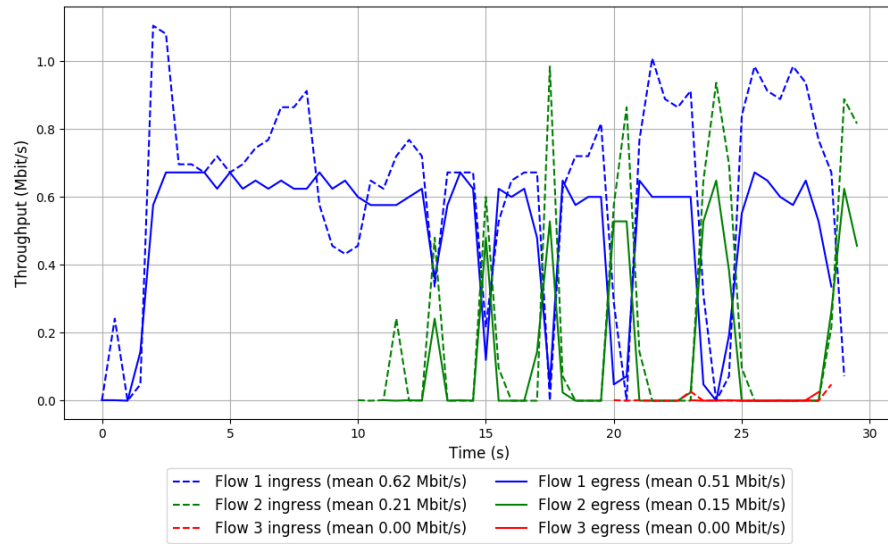
Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 0.41 Mbit/s) — Flow 1 egress (mean 0.37 Mbit/s)
Flow 2 ingress (mean 0.32 Mbit/s) — Flow 2 egress (mean 0.28 Mbit/s)
Flow 3 ingress (mean 0.14 Mbit/s) — Flow 3 egress (mean 0.12 Mbit/s)

Flow 1 (95th percentile 2633.96 ms) • Flow 2 (95th percentile 2680.78 ms) • Flow 3 (95th percentile 2465.23 ms)

9

```
Run 1: Statistics of TCP Cubic

Start at: 2018-01-31 09:36:10
End at: 2018-01-31 09:36:40
Local clock offset: 0.163 ms
Remote clock offset: -4.984 ms


# Below is generated by plot.py at 2018-01-31 11:50:47
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 4992.777 ms
Loss rate: 22.80%
-- Flow 1:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 4642.958 ms
Loss rate: 19.83%
-- Flow 2:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 5432.814 ms
Loss rate: 35.32%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 4963.930 ms
Loss rate: 63.50%
```

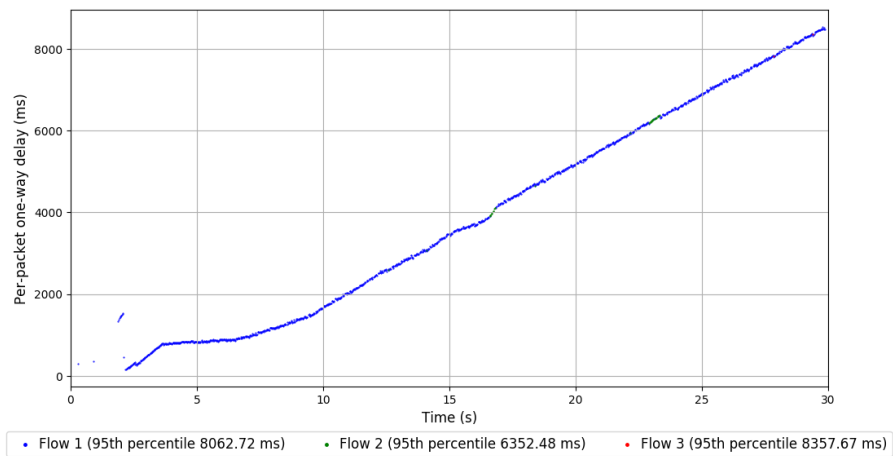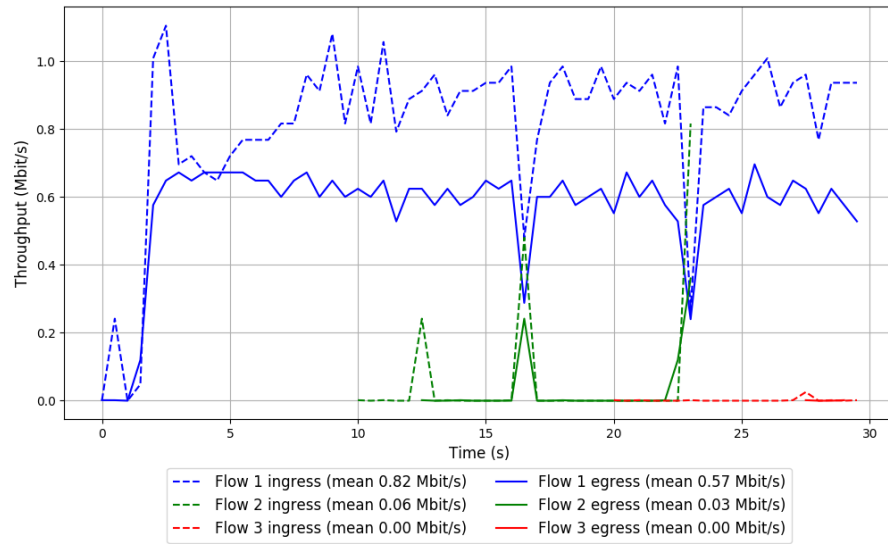Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2018-01-31 09:58:51
End at: 2018-01-31 09:59:21
Local clock offset: 0.219 ms
Remote clock offset: -5.801 ms


# Below is generated by plot.py at 2018-01-31 11:50:47
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 8062.724 ms
Loss rate: 31.50%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 8062.724 ms
Loss rate: 30.78%
-- Flow 2:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 6352.477 ms
Loss rate: 52.87%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 8357.675 ms
Loss rate: 91.06%
```

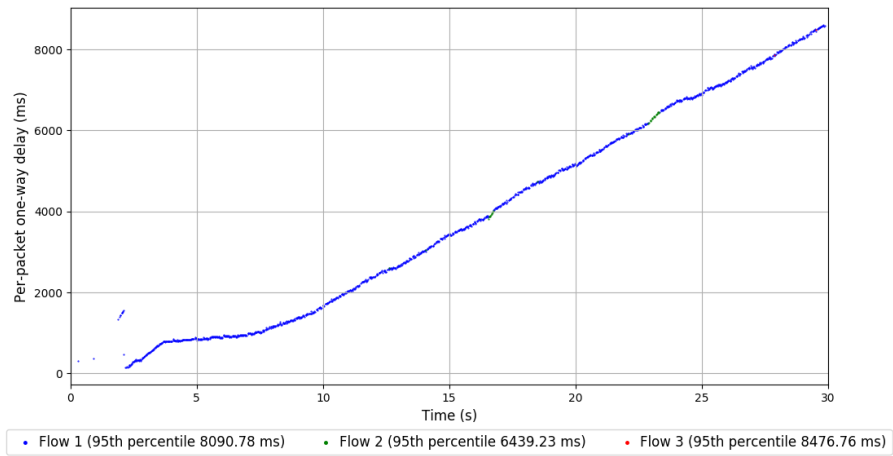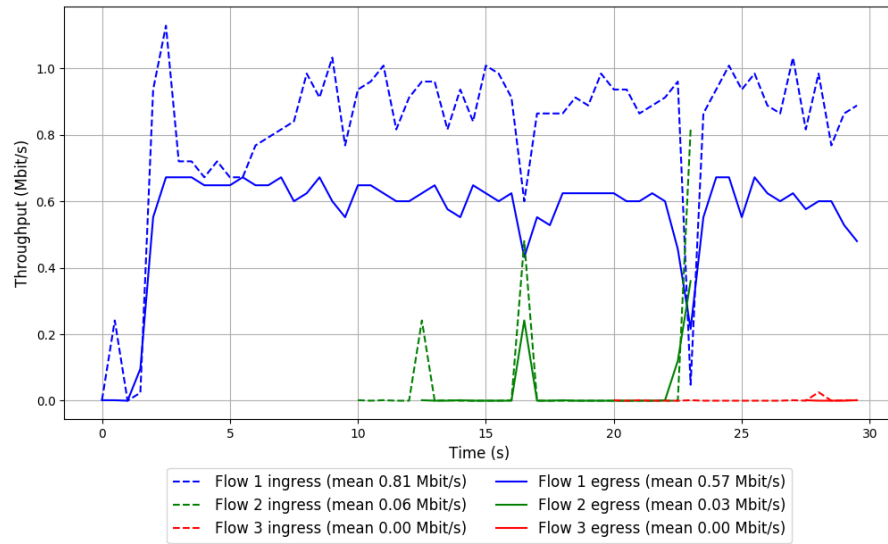Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2018-01-31 10:21:31
End at: 2018-01-31 10:22:01
Local clock offset: 0.239 ms
Remote clock offset: -1.084 ms


# Below is generated by plot.py at 2018-01-31 11:50:47
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 8080.234 ms
Loss rate: 31.49%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 8090.782 ms
Loss rate: 30.77%
-- Flow 2:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 6439.228 ms
Loss rate: 52.87%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 8476.763 ms
Loss rate: 91.06%
```

Run 3: Report of TCP Cubic — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2018-01-31 09:41:12
End at: 2018-01-31 09:41:42
Local clock offset: 0.131 ms
Remote clock offset: 0.011 ms

# Below is generated by plot.py at 2018-01-31 11:50:47
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 409.758 ms
Loss rate: 1.54%
-- Flow 1:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 340.358 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 409.912 ms
Loss rate: 0.58%
-- Flow 3:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 439.727 ms
Loss rate: 7.66%
```
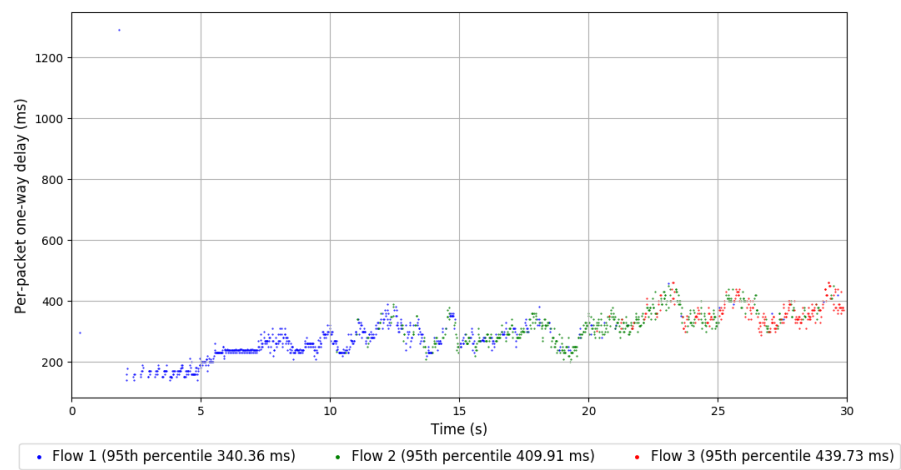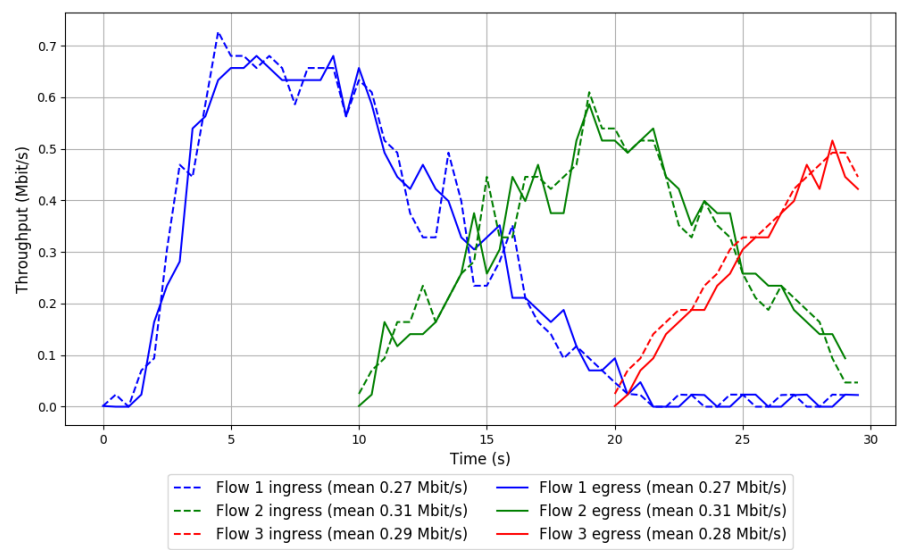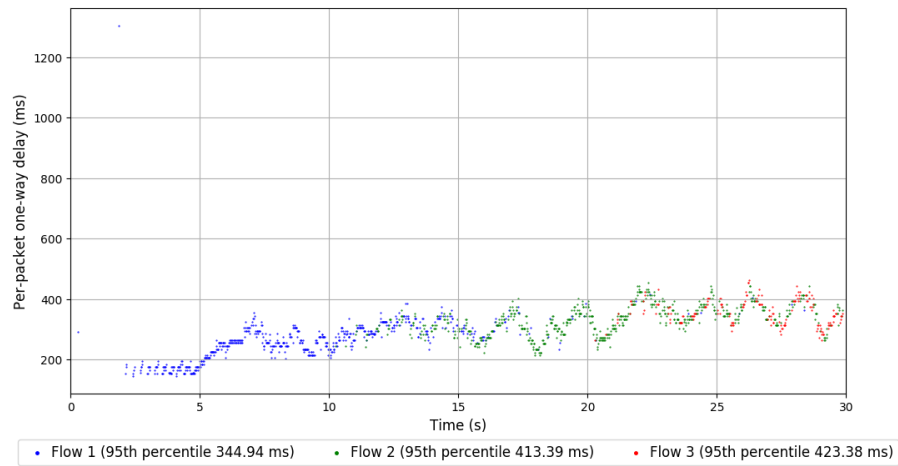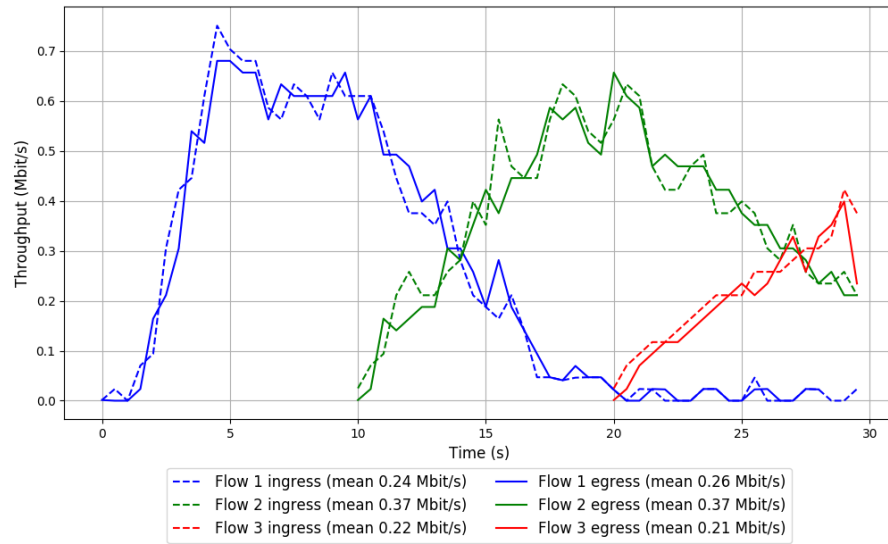
Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-01-31 10:03:53
End at: 2018-01-31 10:04:23
Local clock offset: 0.298 ms
Remote clock offset: -0.187 ms


# Below is generated by plot.py at 2018-01-31 11:50:47
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 403.431 ms
Loss rate: 1.74%
-- Flow 1:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 344.935 ms
Loss rate: 0.16%
-- Flow 2:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 413.386 ms
Loss rate: 1.42%
-- Flow 3:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 423.375 ms
Loss rate: 8.11%
```

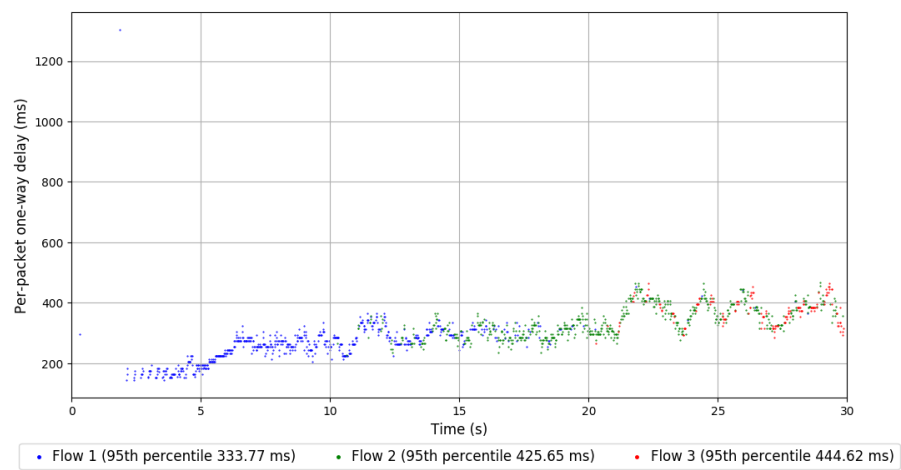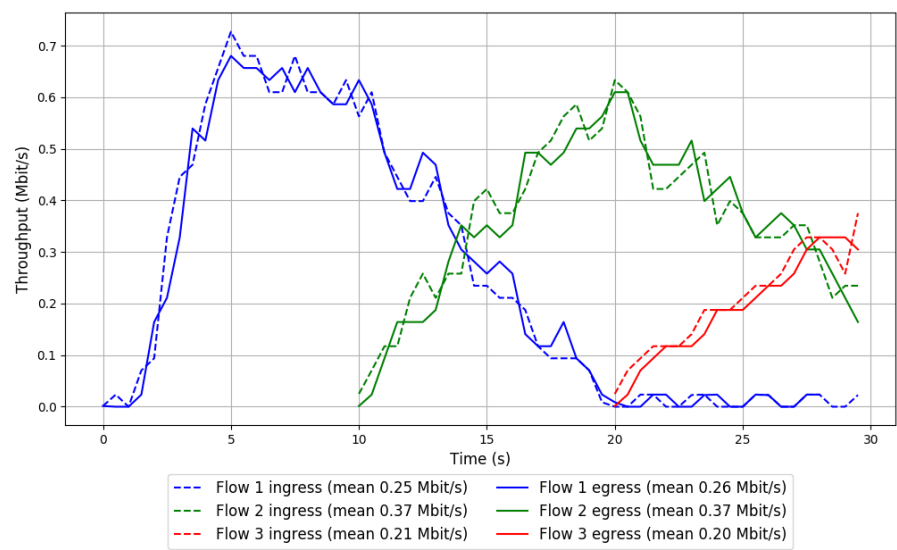# Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-01-31 10:26:34
End at: 2018-01-31 10:27:04
Local clock offset: 0.224 ms
Remote clock offset: -0.199 ms


# Below is generated by plot.py at 2018-01-31 11:50:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 415.738 ms
Loss rate: 1.67%
-- Flow 1:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 333.774 ms
Loss rate: 0.15%
-- Flow 2:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 425.655 ms
Loss rate: 1.61%
-- Flow 3:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 444.617 ms
Loss rate: 7.47%
```

Run 3: Report of LEDBAT — Data Link

- - - Flow 1 ingress (mean 0.25 Mbit/s)   —— Flow 1 egress (mean 0.26 Mbit/s)
- - - Flow 2 ingress (mean 0.37 Mbit/s)   —— Flow 2 egress (mean 0.37 Mbit/s)
- - - Flow 3 ingress (mean 0.21 Mbit/s)   —— Flow 3 egress (mean 0.20 Mbit/s)

- Flow 1 (95th percentile 333.77 ms)   • Flow 2 (95th percentile 425.65 ms)   • Flow 3 (95th percentile 444.62 ms)

21

```
Run 1: Statistics of PCC

Start at: 2018-01-31 09:44:58
End at: 2018-01-31 09:45:28
Local clock offset: 0.217 ms
Remote clock offset: 0.003 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 25996.595 ms
Loss rate: 98.47%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 25996.595 ms
Loss rate: 98.47%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```
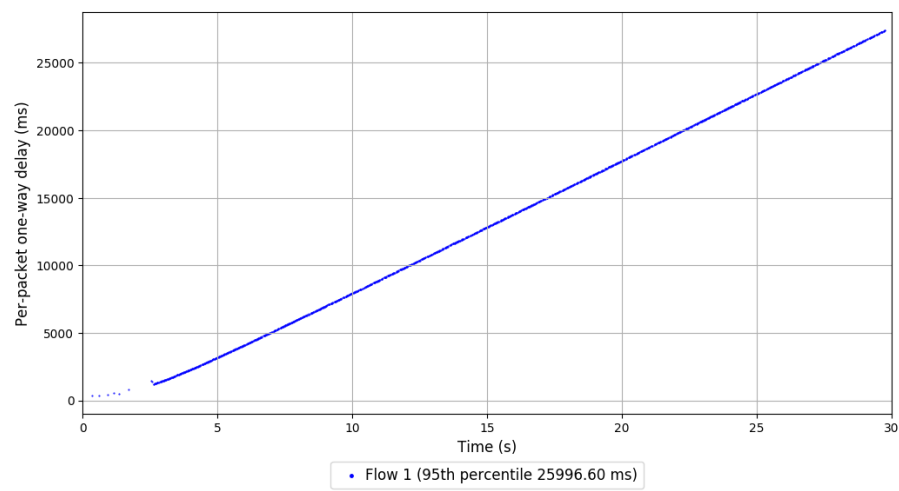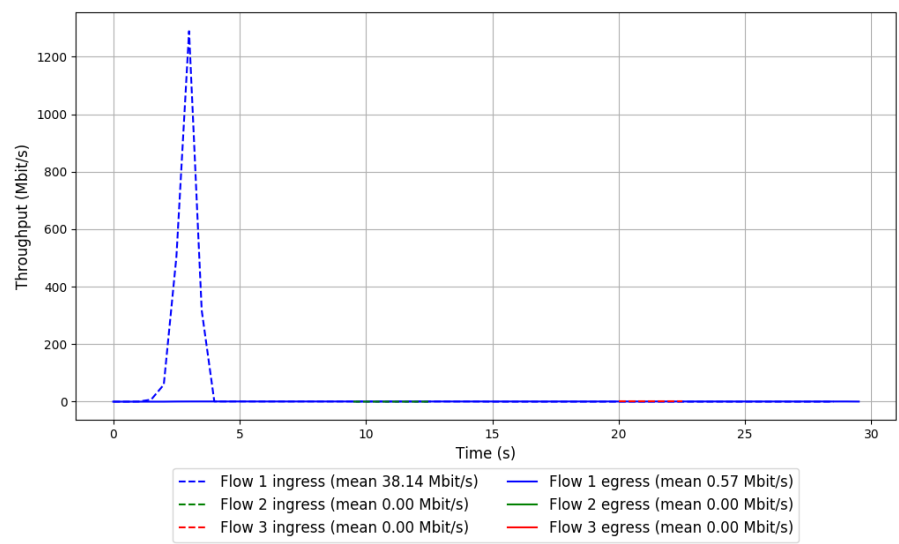
Run 1: Report of PCC — Data Link

- Flow 1 ingress (mean 38.14 Mbit/s)
- Flow 1 egress (mean 0.57 Mbit/s)
- Flow 2 ingress (mean 0.00 Mbit/s)
- Flow 2 egress (mean 0.00 Mbit/s)
- Flow 3 ingress (mean 0.00 Mbit/s)
- Flow 3 egress (mean 0.00 Mbit/s)
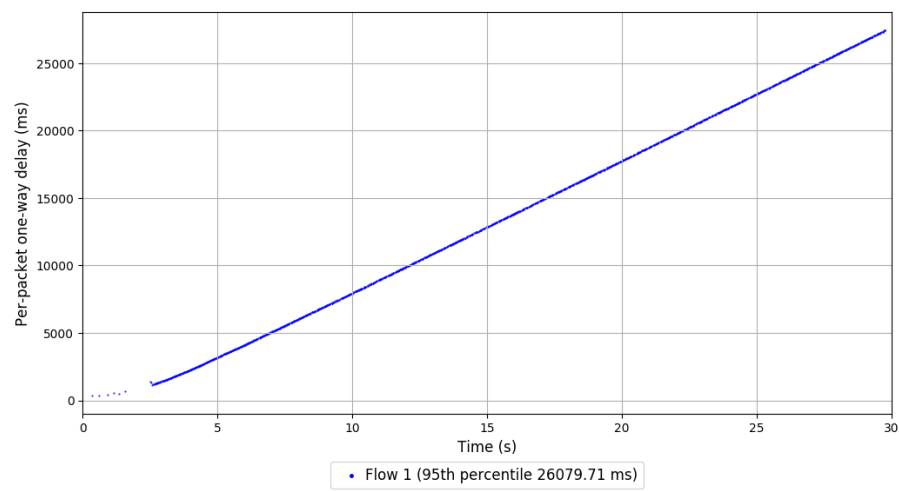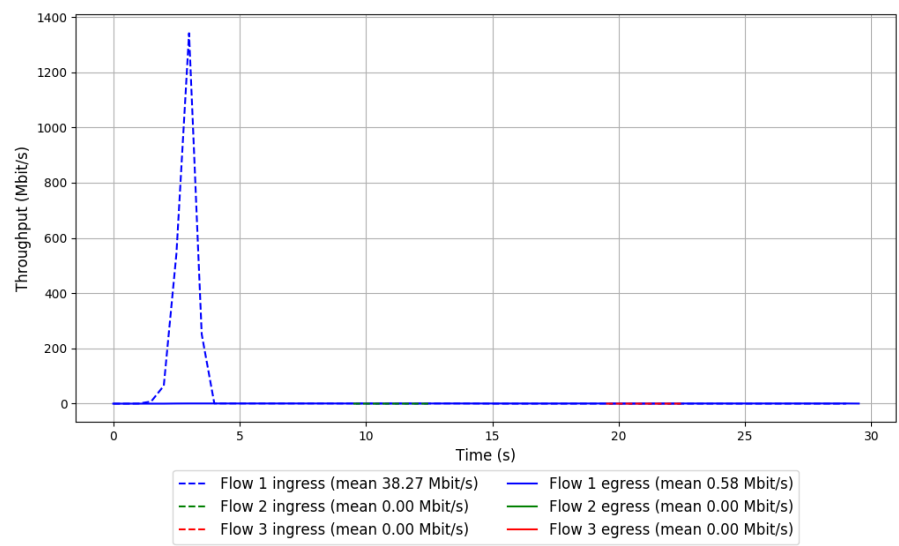

- Flow 1 (95th percentile 25996.60 ms)

23

```
Run 2: Statistics of PCC

Start at: 2018-01-31 10:07:39
End at: 2018-01-31 10:08:09
Local clock offset: 0.292 ms
Remote clock offset: -5.039 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 26079.708 ms
Loss rate: 98.48%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 26079.708 ms
Loss rate: 98.48%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```
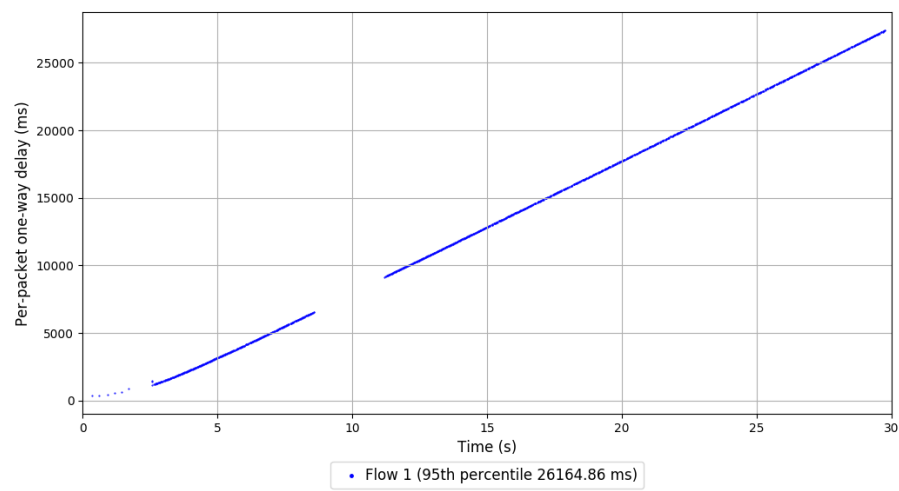
Run 2: Report of PCC — Data Link

Flow 1 ingress (mean 38.27 Mbit/s)   Flow 1 egress (mean 0.58 Mbit/s)
Flow 2 ingress (mean 0.00 Mbit/s)   Flow 2 egress (mean 0.00 Mbit/s)
Flow 3 ingress (mean 0.00 Mbit/s)   Flow 3 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile 26079.71 ms)

```
Run 3: Statistics of PCC

Start at: 2018-01-31 10:30:20
End at: 2018-01-31 10:30:50
Local clock offset: 0.261 ms
Remote clock offset: 0.722 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 26164.859 ms
Loss rate: 98.58%
-- Flow 1:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 26164.859 ms
Loss rate: 98.58%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```
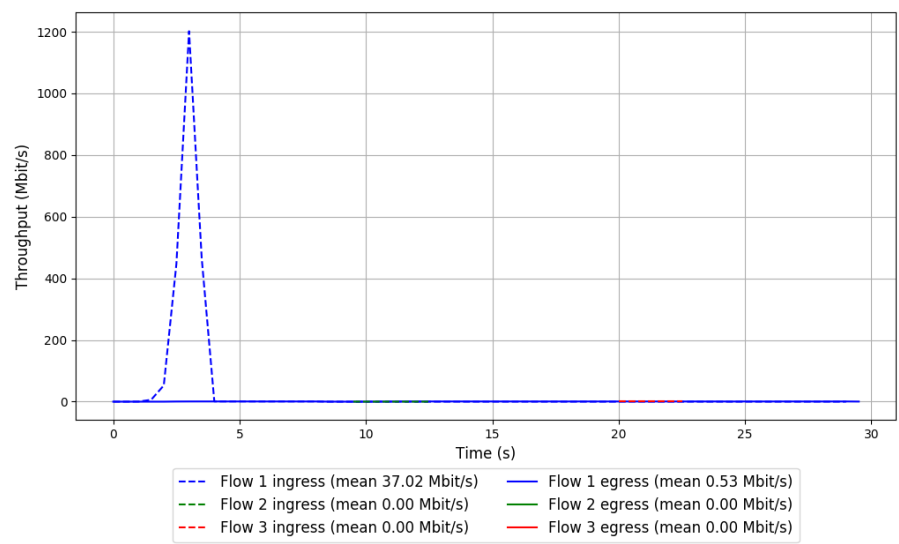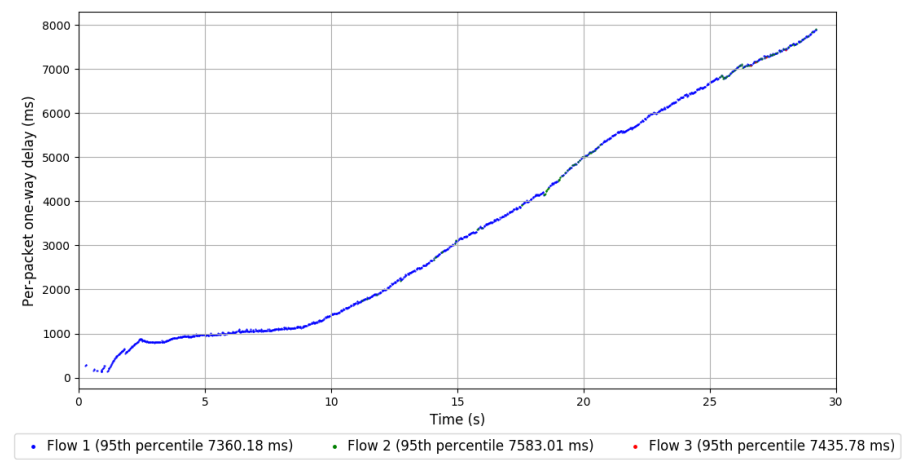
Run 3: Report of PCC — Data Link

Flow 1 ingress (mean 37.02 Mbit/s) --- Flow 1 egress (mean 0.53 Mbit/s) ---
Flow 2 ingress (mean 0.00 Mbit/s) --- Flow 2 egress (mean 0.00 Mbit/s) ---
Flow 3 ingress (mean 0.00 Mbit/s) --- Flow 3 egress (mean 0.00 Mbit/s) ---

• Flow 1 (95th percentile 26164.86 ms)

27

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-01-31 09:48:46
End at: 2018-01-31 09:49:16
Local clock offset: 0.251 ms
Remote clock offset: 0.926 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 7413.217 ms
Loss rate: 29.01%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 7360.176 ms
Loss rate: 28.84%
-- Flow 2:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 7583.012 ms
Loss rate: 31.70%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 7435.778 ms
Loss rate: 33.33%
```
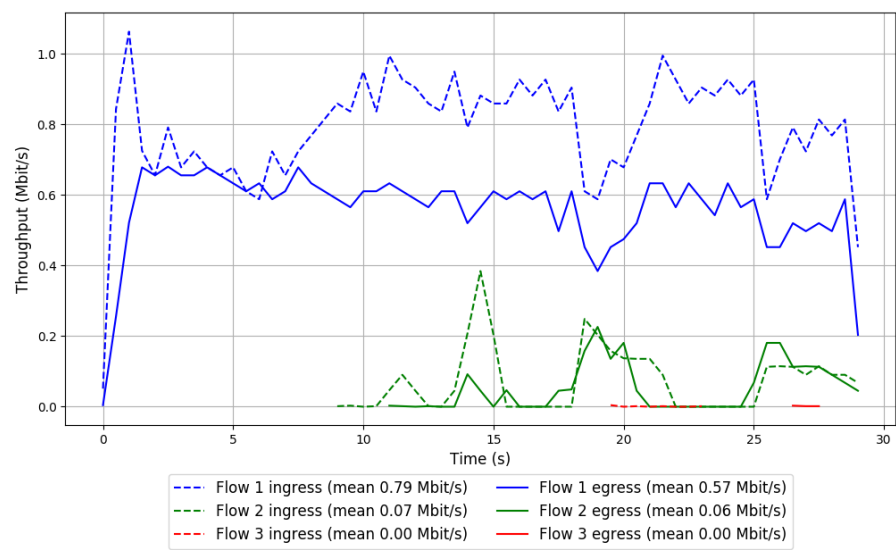
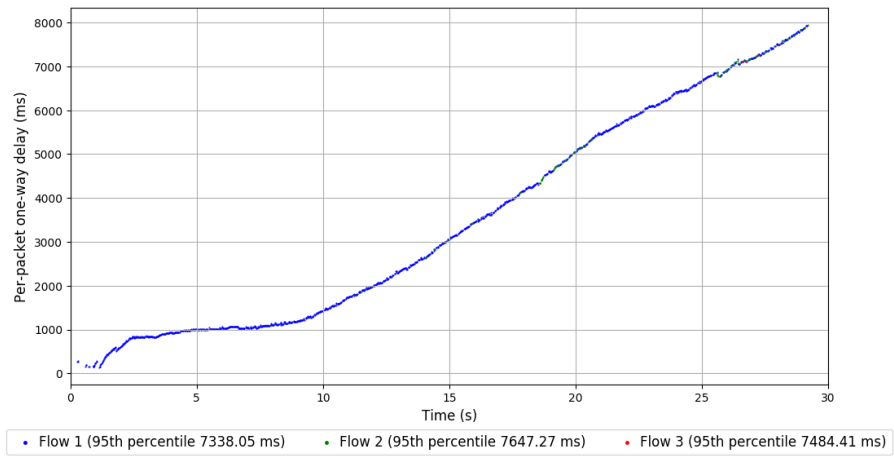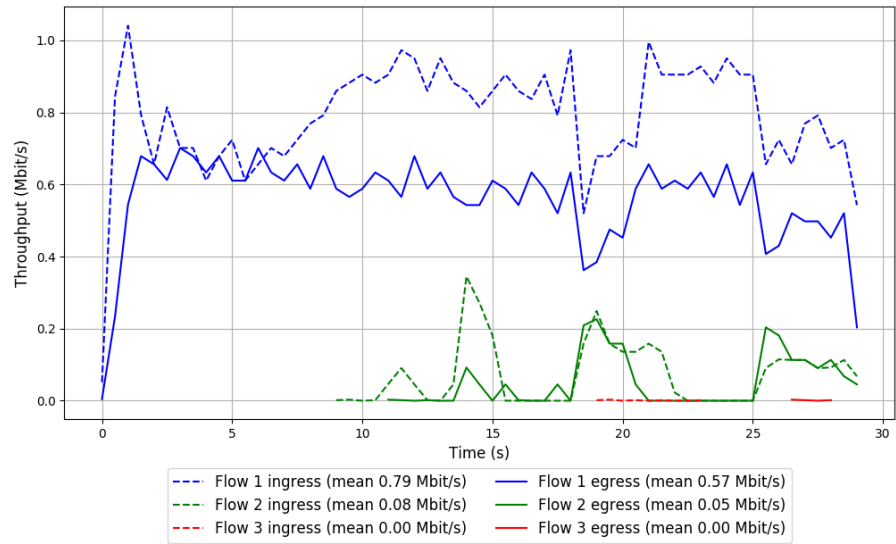# Run 1: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 0.79 Mbit/s)   Flow 1 egress (mean 0.57 Mbit/s)
Flow 2 ingress (mean 0.07 Mbit/s)   Flow 2 egress (mean 0.06 Mbit/s)
Flow 3 ingress (mean 0.00 Mbit/s)   Flow 3 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile 7360.18 ms)   Flow 2 (95th percentile 7583.01 ms)   Flow 3 (95th percentile 7435.78 ms)

29

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-01-31 10:11:27
End at: 2018-01-31 10:11:57
Local clock offset: 0.272 ms
Remote clock offset: -0.182 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 7371.646 ms
Loss rate: 29.42%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 7338.048 ms
Loss rate: 29.11%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 7647.265 ms
Loss rate: 34.26%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 7484.413 ms
Loss rate: 33.33%
```
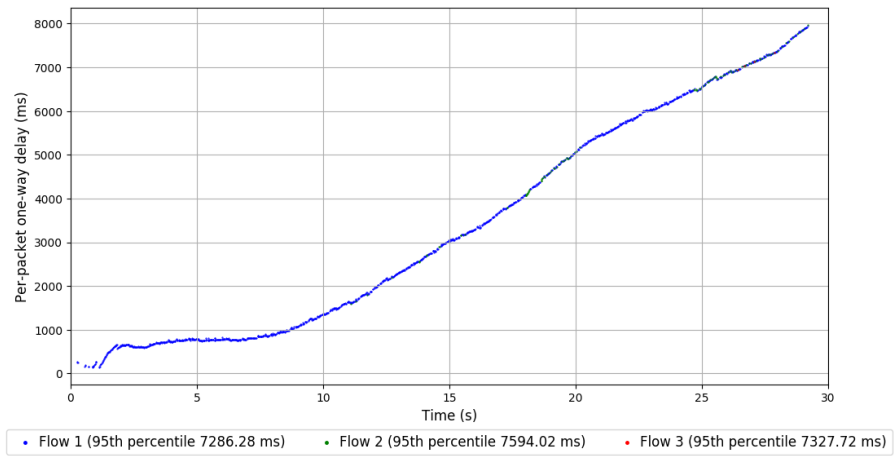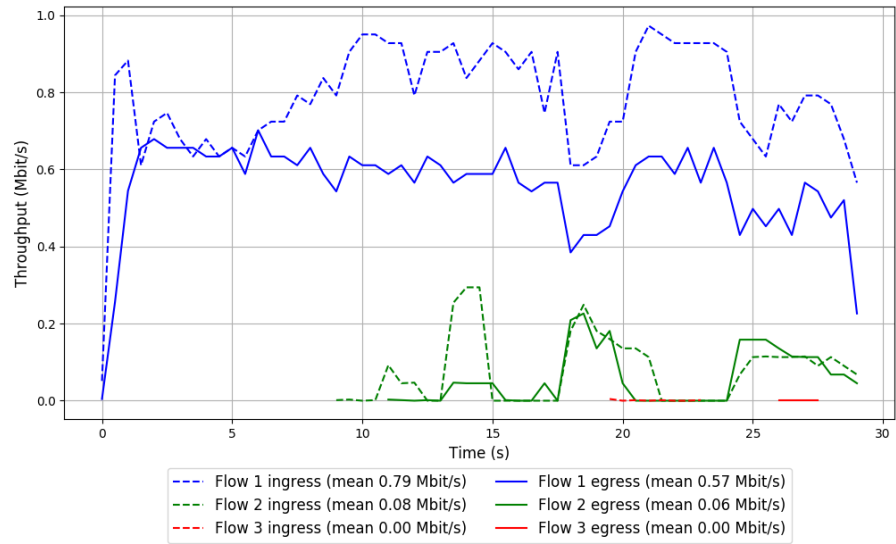
Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-01-31 10:34:08
End at: 2018-01-31 10:34:38
Local clock offset: 0.326 ms
Remote clock offset: 0.792 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 7303.144 ms
Loss rate: 28.99%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 7286.277 ms
Loss rate: 28.78%
-- Flow 2:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 7594.018 ms
Loss rate: 32.05%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 7327.722 ms
Loss rate: 33.33%
```

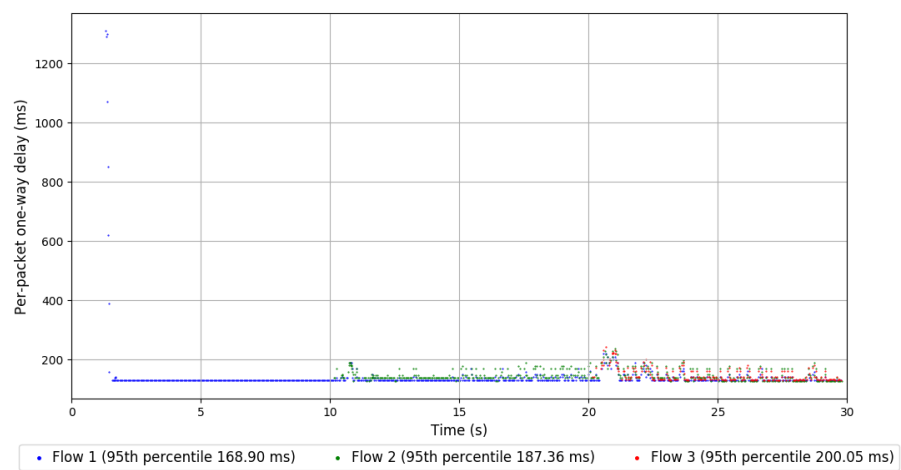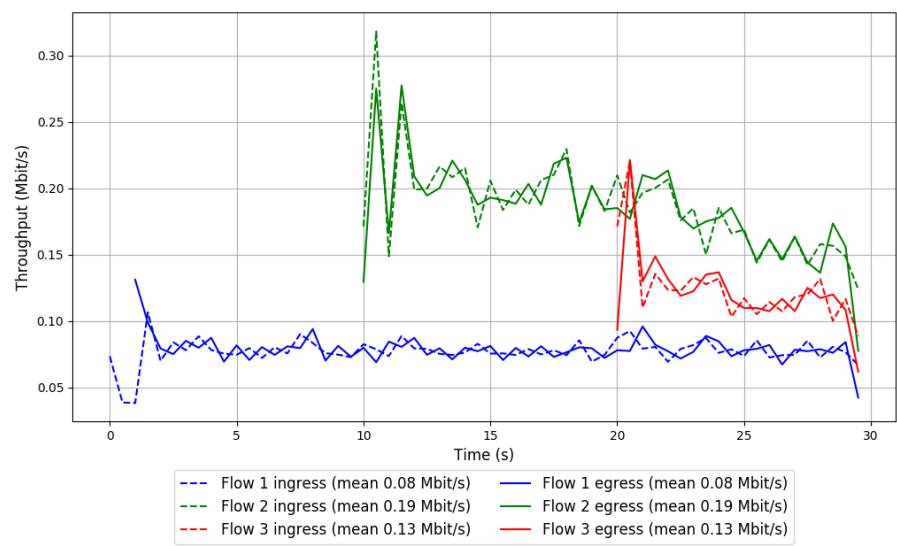## Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 0.79 Mbit/s) — — — Flow 1 egress (mean 0.57 Mbit/s) ———
Flow 2 ingress (mean 0.08 Mbit/s) — — — Flow 2 egress (mean 0.06 Mbit/s) ———
Flow 3 ingress (mean 0.00 Mbit/s) — — — Flow 3 egress (mean 0.00 Mbit/s) ———

Flow 1 (95th percentile 7286.28 ms)   Flow 2 (95th percentile 7594.02 ms)   Flow 3 (95th percentile 7327.72 ms)
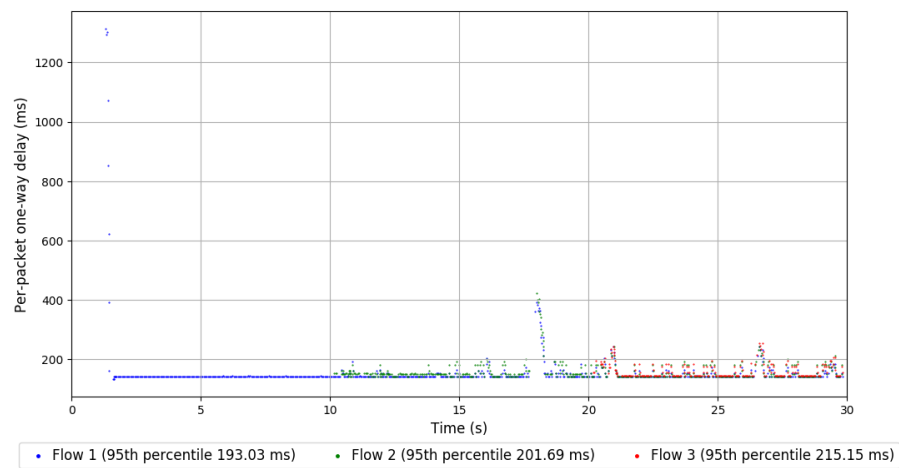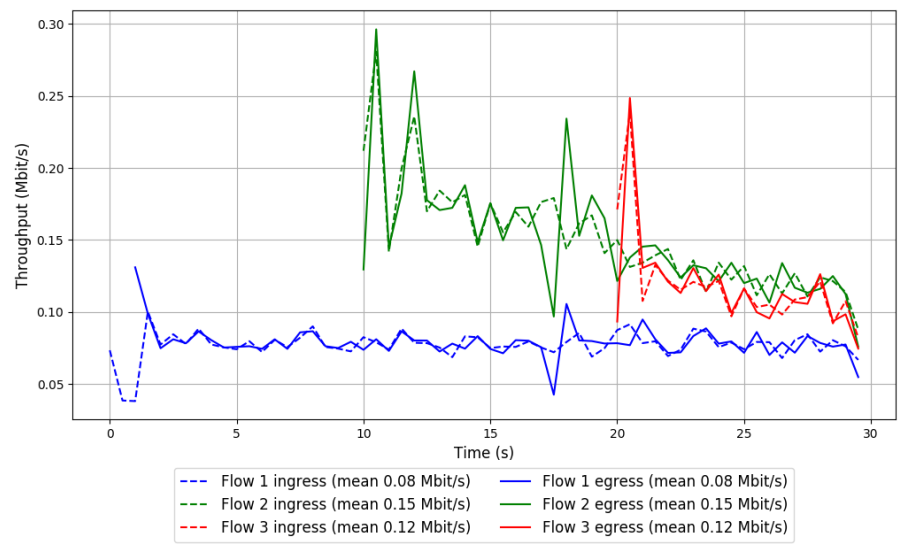
```
Run 1: Statistics of SCReAM

Start at: 2018-01-31 09:52:32
End at: 2018-01-31 09:53:03
Local clock offset: 0.263 ms
Remote clock offset: -0.979 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 180.949 ms
Loss rate: 1.25%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 168.902 ms
Loss rate: 0.92%
-- Flow 2:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 187.362 ms
Loss rate: 1.04%
-- Flow 3:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 200.048 ms
Loss rate: 2.46%
```

Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-01-31 10:15:13
End at: 2018-01-31 10:15:43
Local clock offset: 0.236 ms
Remote clock offset: -5.022 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 201.741 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 193.031 ms
Loss rate: 0.79%
-- Flow 2:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 201.691 ms
Loss rate: 0.88%
-- Flow 3:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 215.152 ms
Loss rate: 2.03%
```
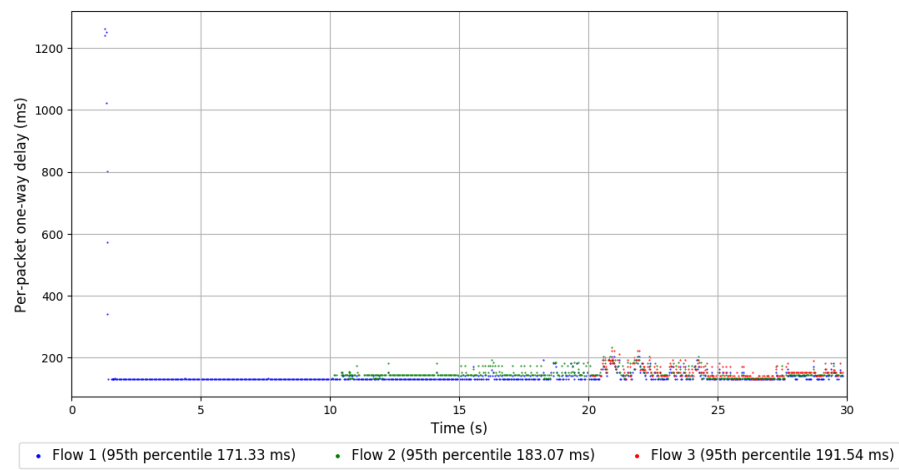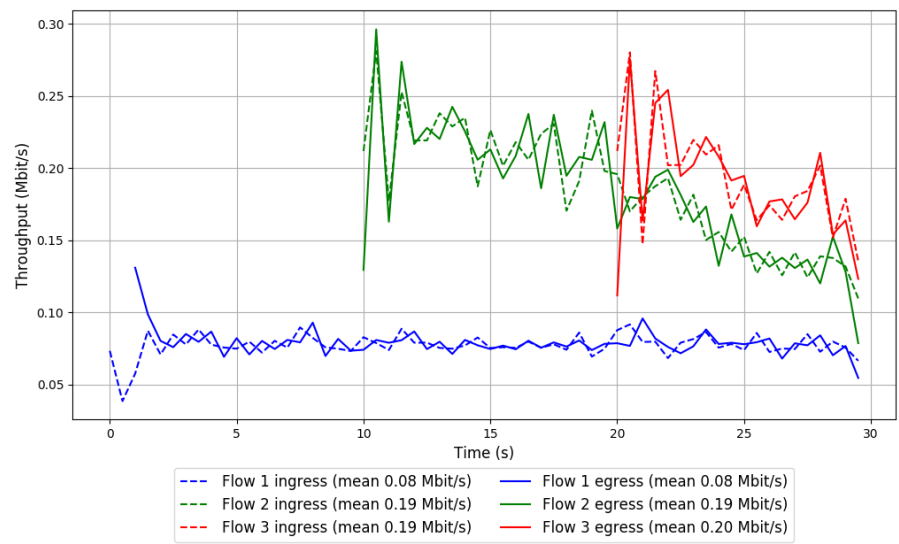
Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2018-01-31 10:37:54
End at: 2018-01-31 10:38:24
Local clock offset: 0.352 ms
Remote clock offset: 0.613 ms

# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 183.014 ms
Loss rate: 1.17%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 171.326 ms
Loss rate: 0.78%
-- Flow 2:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 183.070 ms
Loss rate: 0.93%
-- Flow 3:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 191.536 ms
Loss rate: 2.09%
```
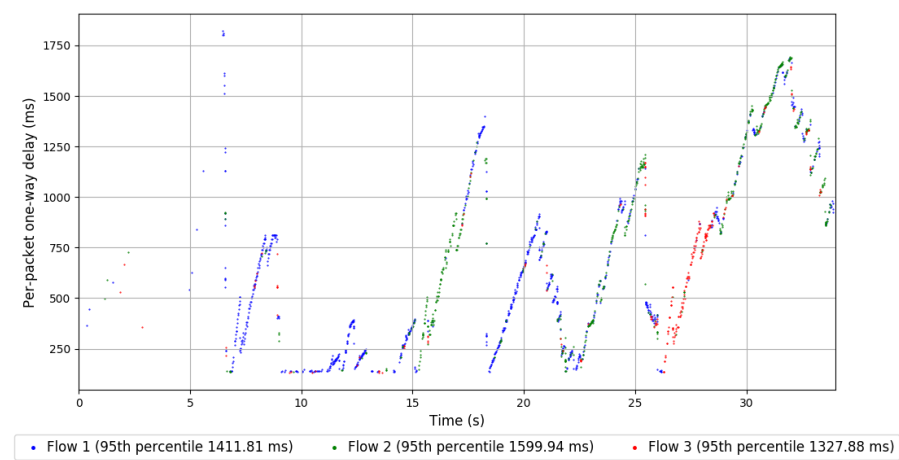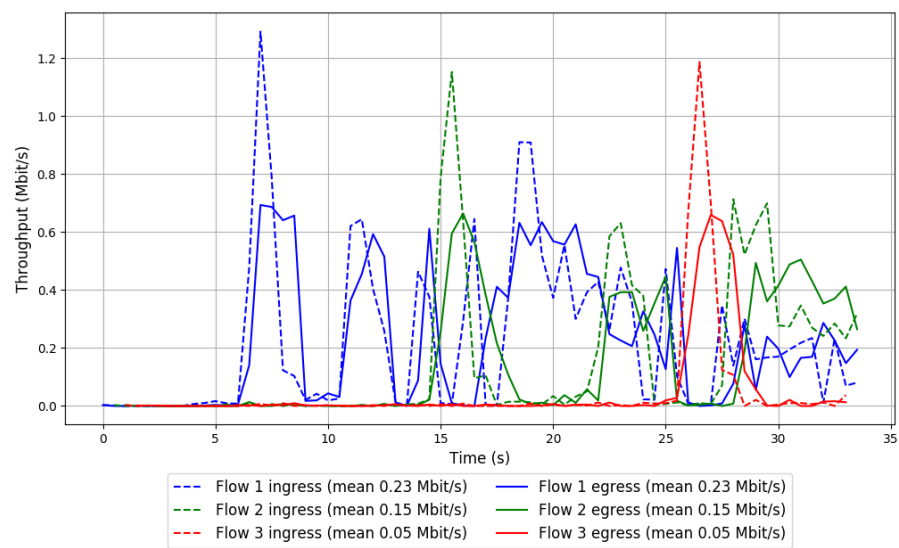
Run 3: Report of SCReAM — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2018-01-31 09:37:25
End at: 2018-01-31 09:37:55
Local clock offset: 0.182 ms
Remote clock offset: -4.936 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 1496.763 ms
Loss rate: 2.85%
-- Flow 1:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 1411.811 ms
Loss rate: 1.22%
-- Flow 2:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 1599.943 ms
Loss rate: 5.82%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 1327.884 ms
Loss rate: 1.25%
```

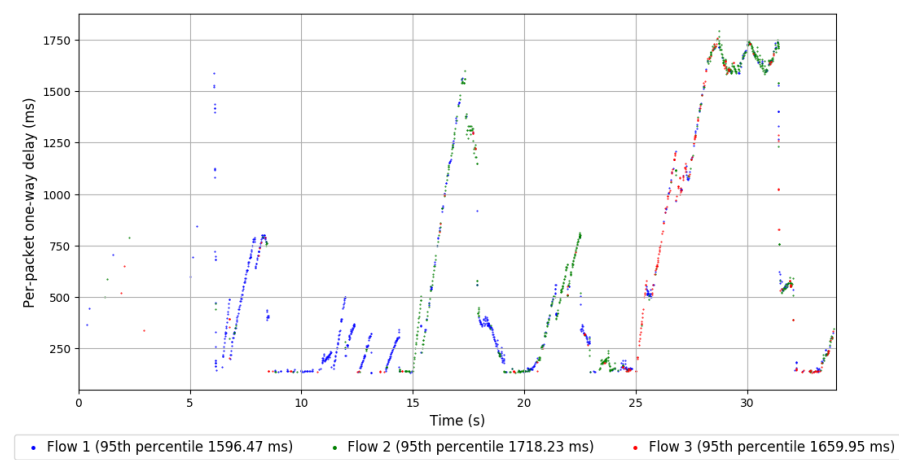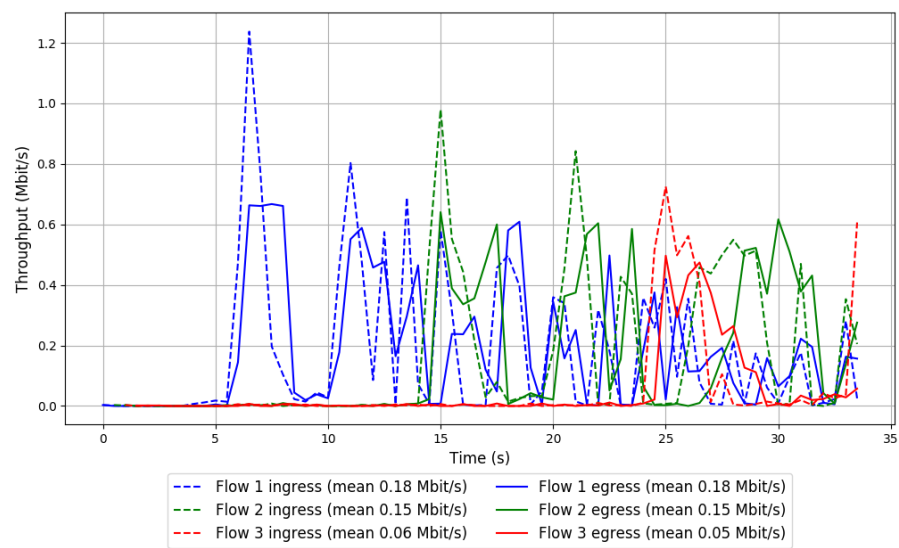Run 1: Report of WebRTC media — Data Link

Flow 1 ingress (mean 0.23 Mbit/s)   Flow 1 egress (mean 0.23 Mbit/s)
Flow 2 ingress (mean 0.15 Mbit/s)   Flow 2 egress (mean 0.15 Mbit/s)
Flow 3 ingress (mean 0.05 Mbit/s)   Flow 3 egress (mean 0.05 Mbit/s)

Flow 1 (95th percentile 1411.81 ms)   Flow 2 (95th percentile 1599.94 ms)   Flow 3 (95th percentile 1327.88 ms)

```
Run 2: Statistics of WebRTC media

Start at: 2018-01-31 10:00:06
End at: 2018-01-31 10:00:36
Local clock offset: 0.292 ms
Remote clock offset: -4.958 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 1689.534 ms
Loss rate: 2.75%
-- Flow 1:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 1596.468 ms
Loss rate: 0.05%
-- Flow 2:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 1718.226 ms
Loss rate: 1.44%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 1659.947 ms
Loss rate: 15.31%
```
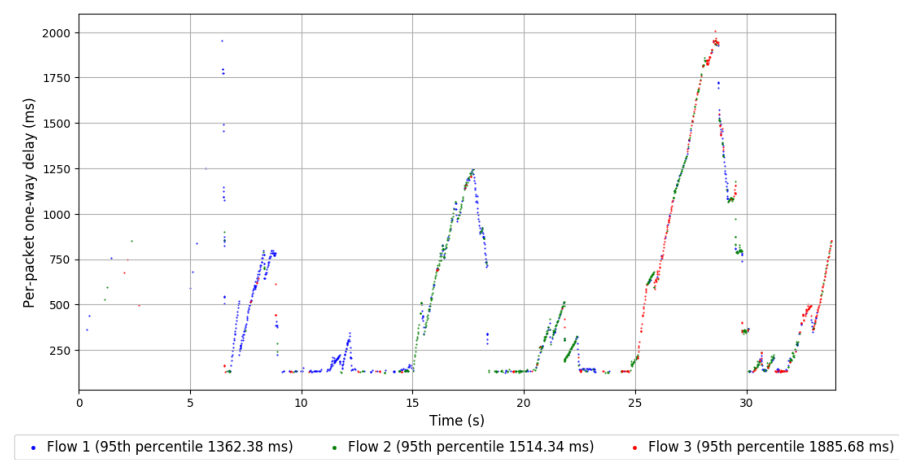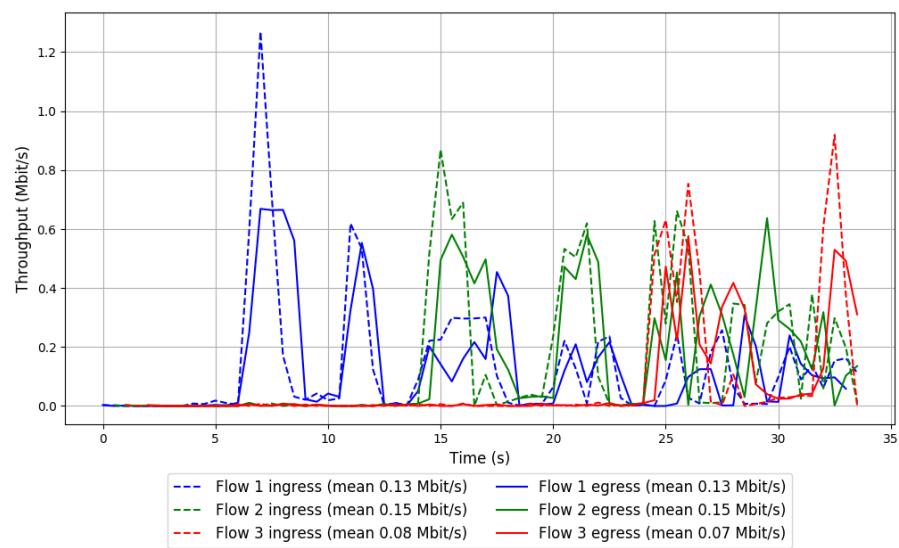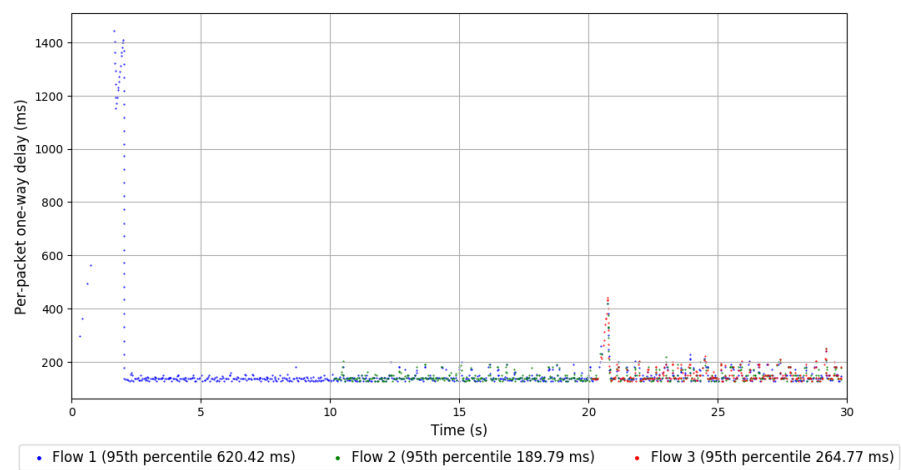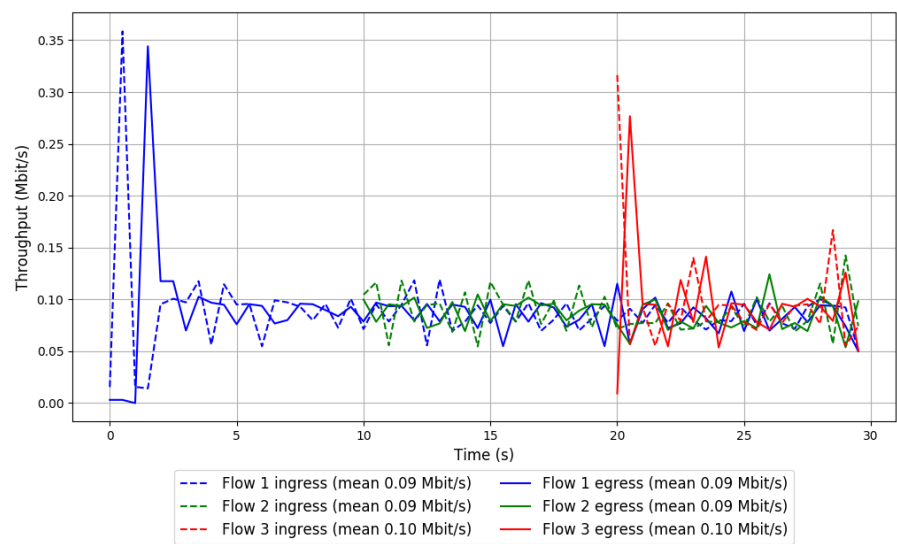
Run 2: Report of WebRTC media — Data Link

Flow 1 ingress (mean 0.18 Mbit/s)   Flow 1 egress (mean 0.18 Mbit/s)
Flow 2 ingress (mean 0.15 Mbit/s)   Flow 2 egress (mean 0.15 Mbit/s)
Flow 3 ingress (mean 0.06 Mbit/s)   Flow 3 egress (mean 0.05 Mbit/s)

Flow 1 (95th percentile 1596.47 ms)   Flow 2 (95th percentile 1718.23 ms)   Flow 3 (95th percentile 1659.95 ms)

```
Run 3: Statistics of WebRTC media

Start at: 2018-01-31 10:22:47
End at: 2018-01-31 10:23:17
Local clock offset: 0.23 ms
Remote clock offset: 0.68 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 1655.767 ms
Loss rate: 4.22%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 1362.380 ms
Loss rate: 3.09%
-- Flow 2:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 1514.336 ms
Loss rate: 2.73%
-- Flow 3:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 1885.678 ms
Loss rate: 9.15%
```
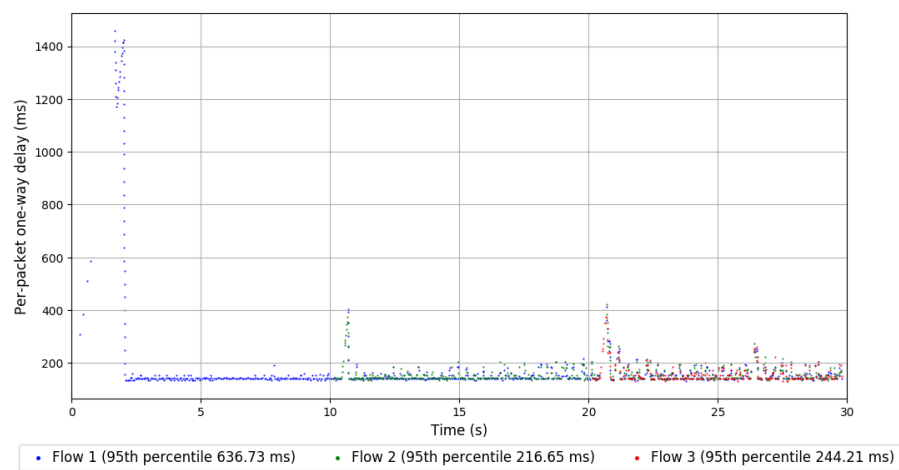
Run 3: Report of WebRTC media — Data Link

```
Run 1: Statistics of Sprout

Start at: 2018-01-31 09:47:31
End at: 2018-01-31 09:48:01
Local clock offset: 0.234 ms
Remote clock offset: -0.9 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 248.389 ms
Loss rate: 1.99%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 620.423 ms
Loss rate: 1.10%
-- Flow 2:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 189.795 ms
Loss rate: 1.98%
-- Flow 3:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 264.767 ms
Loss rate: 4.35%
```
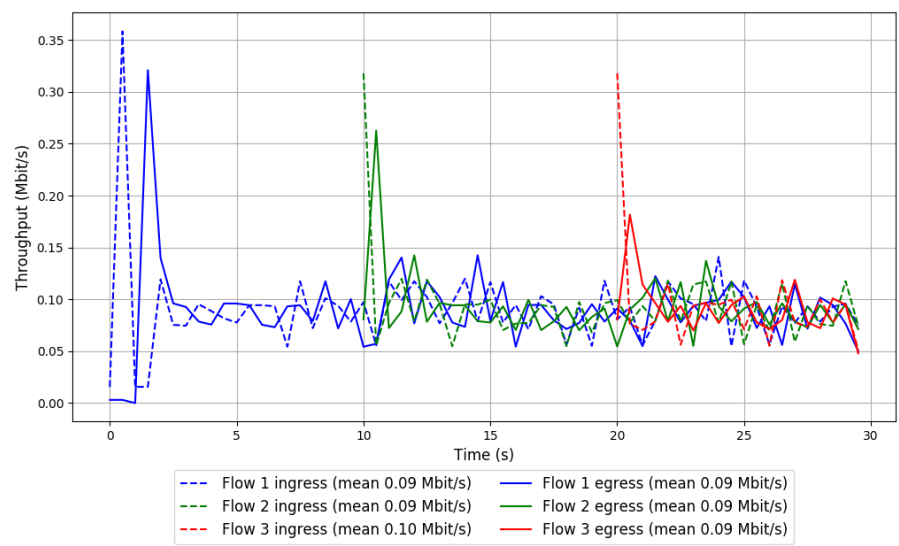
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-01-31 10:10:12
End at: 2018-01-31 10:10:42
Local clock offset: 0.261 ms
Remote clock offset: -5.838 ms

# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 286.631 ms
Loss rate: 1.98%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 636.725 ms
Loss rate: 1.07%
-- Flow 2:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 216.653 ms
Loss rate: 1.75%
-- Flow 3:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 244.214 ms
Loss rate: 4.97%
```

Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-01-31 10:32:52
End at: 2018-01-31 10:33:22
Local clock offset: 0.313 ms
Remote clock offset: -5.971 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 254.689 ms
Loss rate: 1.64%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 596.154 ms
Loss rate: 0.97%
-- Flow 2:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 213.961 ms
Loss rate: 2.61%
-- Flow 3:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 208.493 ms
Loss rate: 1.72%
```
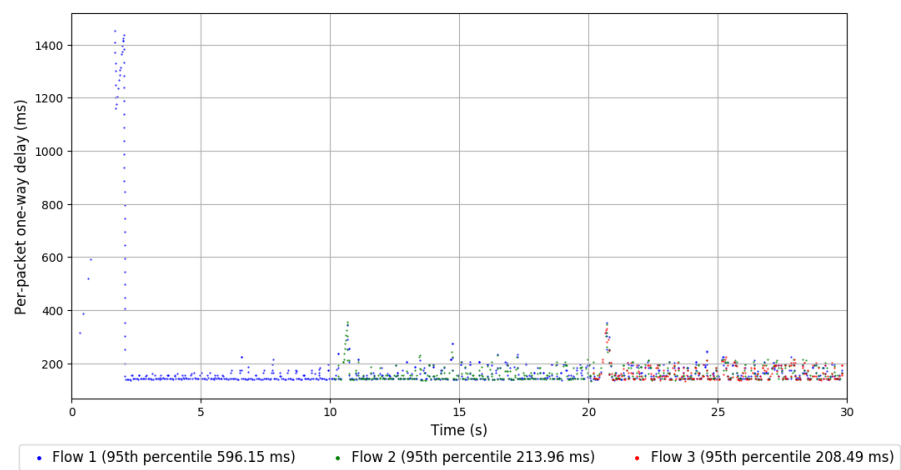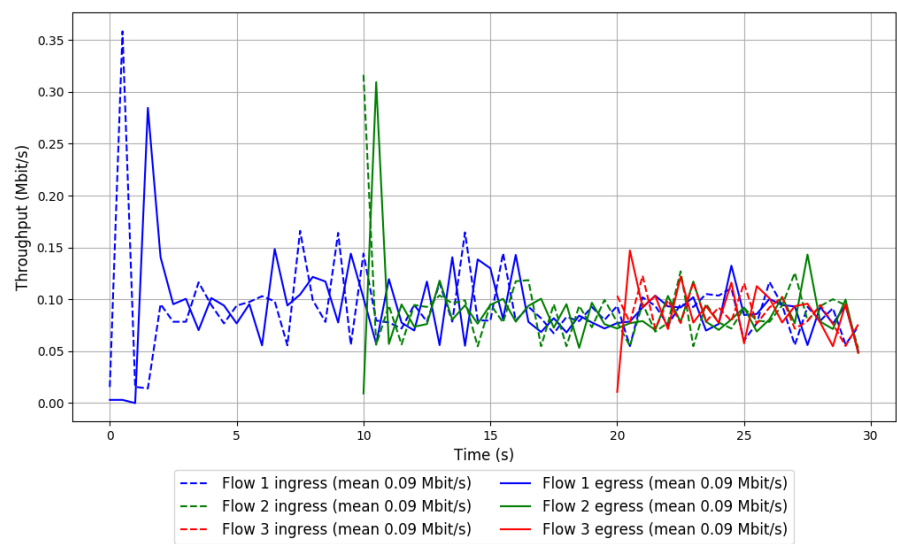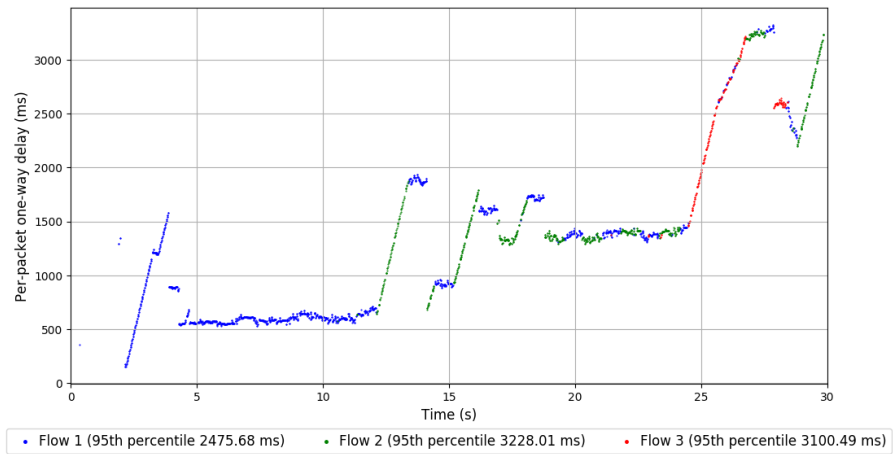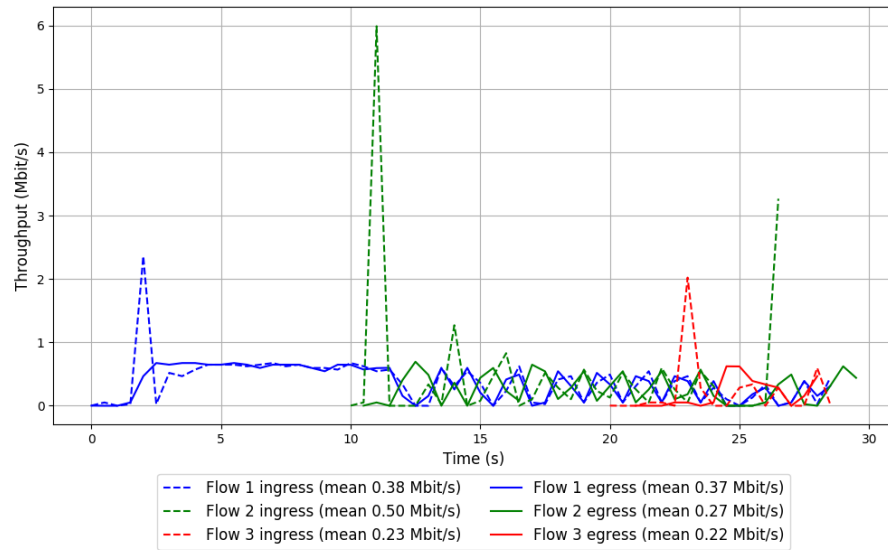
Run 3: Report of Sprout — Data Link

- Flow 1 ingress (mean 0.09 Mbit/s)
- Flow 1 egress (mean 0.09 Mbit/s)
- Flow 2 ingress (mean 0.09 Mbit/s)
- Flow 2 egress (mean 0.09 Mbit/s)
- Flow 3 ingress (mean 0.09 Mbit/s)
- Flow 3 egress (mean 0.09 Mbit/s)

- Flow 1 (95th percentile 596.15 ms)
- Flow 2 (95th percentile 213.96 ms)
- Flow 3 (95th percentile 208.49 ms)

```
Run 1: Statistics of TaoVA-100x

Start at: 2018-01-31 09:46:15
End at: 2018-01-31 09:46:45
Local clock offset: 0.165 ms
Remote clock offset: 0.887 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 3072.996 ms
Loss rate: 19.29%
-- Flow 1:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 2475.676 ms
Loss rate: 4.51%
-- Flow 2:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 3228.005 ms
Loss rate: 37.55%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 3100.495 ms
Loss rate: 23.01%
```
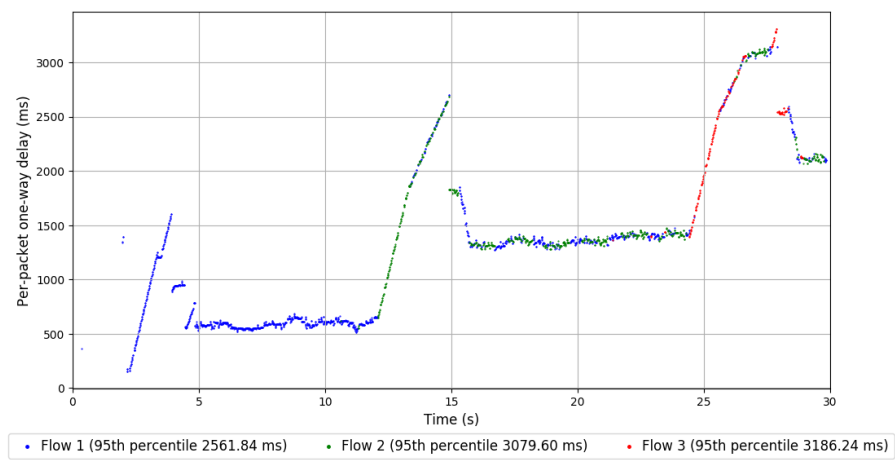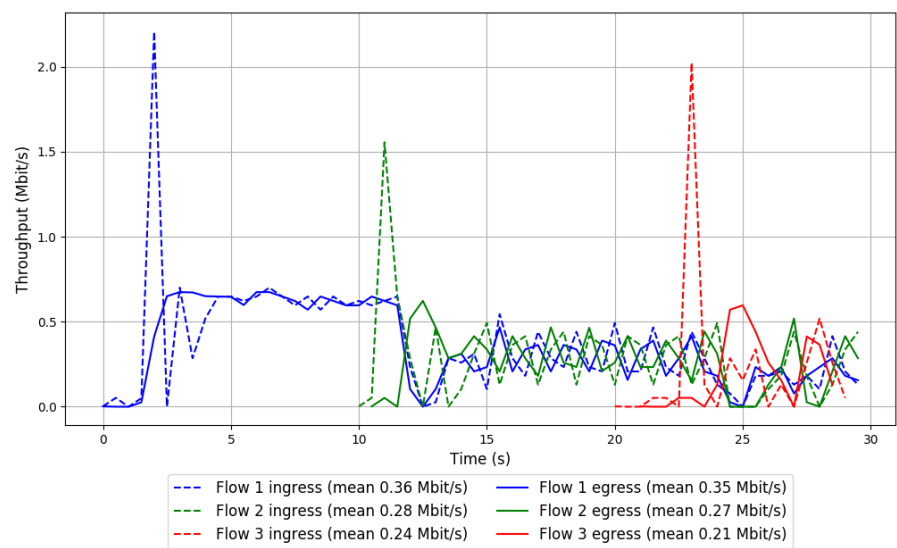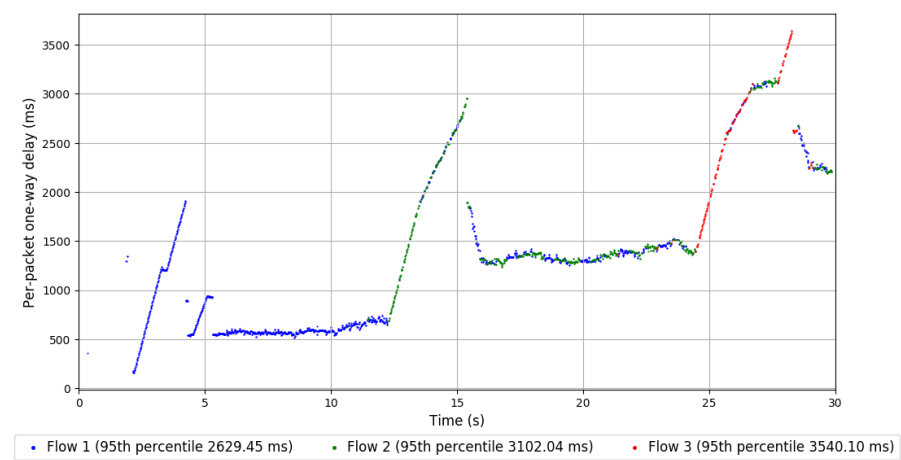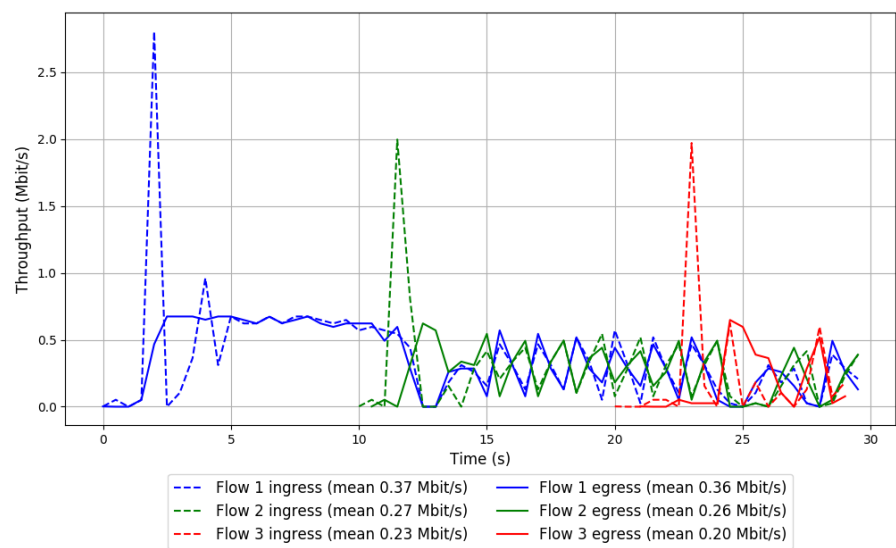
Run 1: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 0.38 Mbit/s) Flow 1 egress (mean 0.37 Mbit/s)
Flow 2 ingress (mean 0.50 Mbit/s) Flow 2 egress (mean 0.27 Mbit/s)
Flow 3 ingress (mean 0.23 Mbit/s) Flow 3 egress (mean 0.22 Mbit/s)

Flow 1 (95th percentile 2475.68 ms)   Flow 2 (95th percentile 3228.01 ms)   Flow 3 (95th percentile 3100.49 ms)

53

```
Run 2: Statistics of TaoVA-100x

Start at: 2018-01-31 10:08:56
End at: 2018-01-31 10:09:26
Local clock offset: 0.282 ms
Remote clock offset: 0.855 ms

# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 2979.421 ms
Loss rate: 7.73%
-- Flow 1:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 2561.838 ms
Loss rate: 4.04%
-- Flow 2:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 3079.603 ms
Loss rate: 8.12%
-- Flow 3:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 3186.238 ms
Loss rate: 25.60%
```
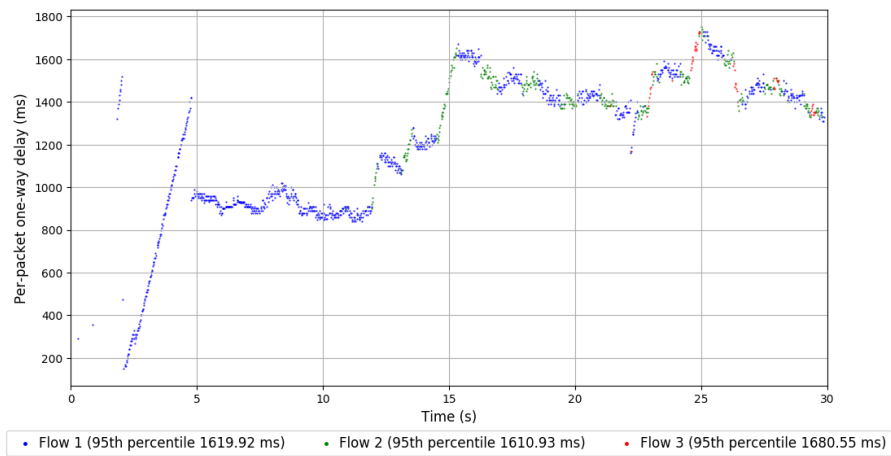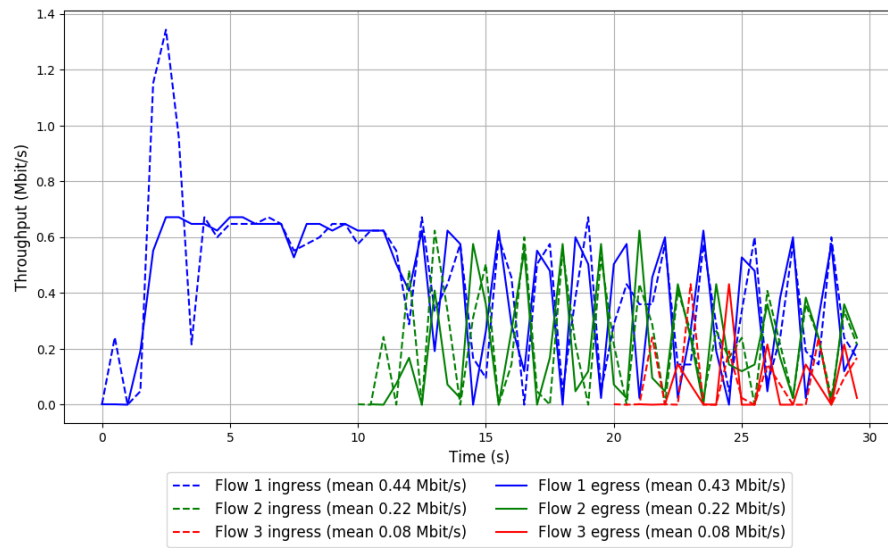
Run 2: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 0.36 Mbit/s) — Flow 1 egress (mean 0.35 Mbit/s)
Flow 2 ingress (mean 0.28 Mbit/s) — Flow 2 egress (mean 0.27 Mbit/s)
Flow 3 ingress (mean 0.24 Mbit/s) — Flow 3 egress (mean 0.21 Mbit/s)

Flow 1 (95th percentile 2561.84 ms) · Flow 2 (95th percentile 3079.60 ms) · Flow 3 (95th percentile 3186.24 ms)

```
Run 3: Statistics of TaoVA-100x

Start at: 2018-01-31 10:31:37
End at: 2018-01-31 10:32:07
Local clock offset: 0.214 ms
Remote clock offset: -1.096 ms

# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 3068.409 ms
Loss rate: 7.56%
-- Flow 1:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 2629.451 ms
Loss rate: 4.35%
-- Flow 2:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 3102.040 ms
Loss rate: 7.86%
-- Flow 3:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 3540.100 ms
Loss rate: 23.89%
```

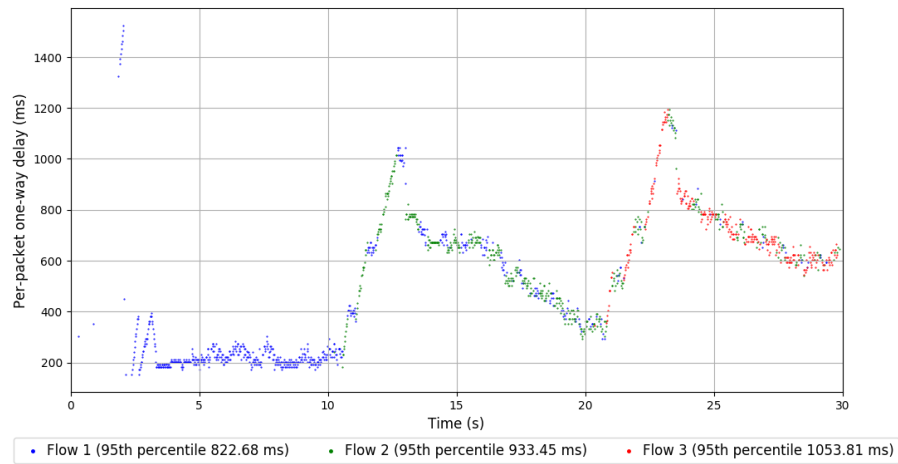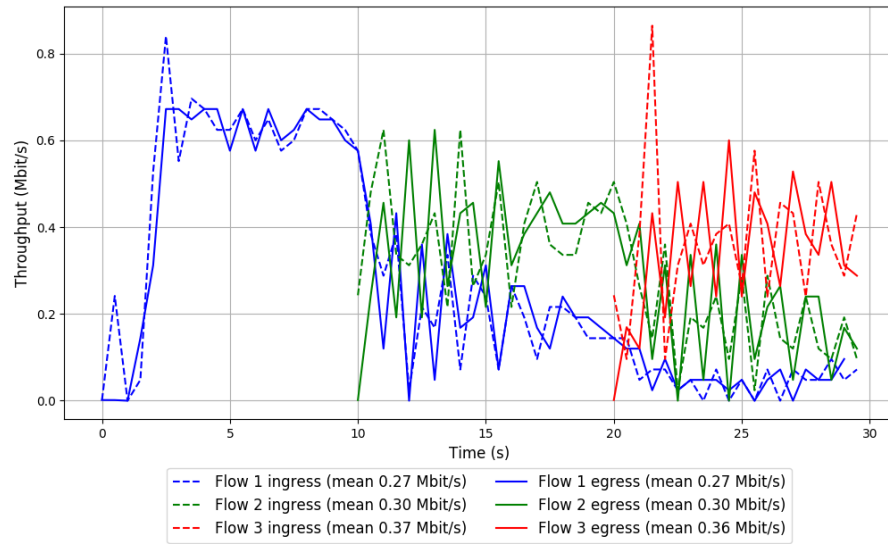Run 3: Report of TaoVA-100x — Data Link

```
Run 1: Statistics of TCP Vegas

Start at: 2018-01-31 09:53:48
End at: 2018-01-31 09:54:18
Local clock offset: 0.278 ms
Remote clock offset: -5.757 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1620.718 ms
Loss rate: 4.94%
-- Flow 1:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 1619.923 ms
Loss rate: 3.58%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1610.928 ms
Loss rate: 6.61%
-- Flow 3:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 1680.554 ms
Loss rate: 17.85%
```

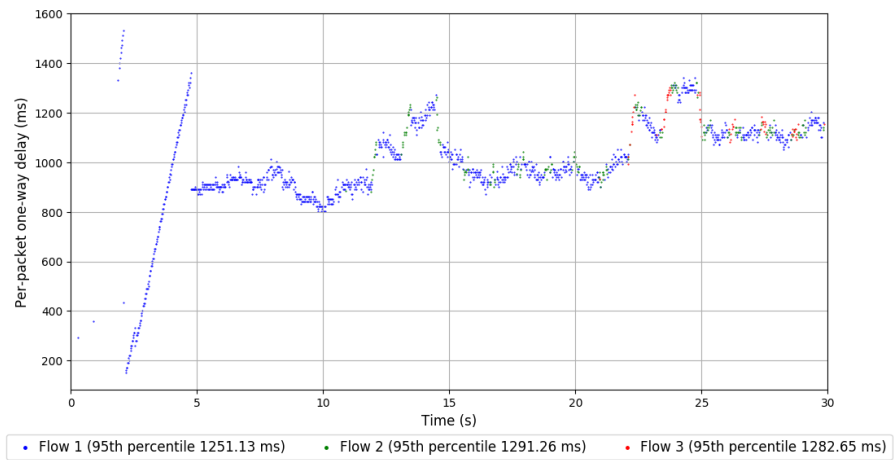Run 1: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 0.44 Mbit/s)   Flow 1 egress (mean 0.43 Mbit/s)
Flow 2 ingress (mean 0.22 Mbit/s)   Flow 2 egress (mean 0.22 Mbit/s)
Flow 3 ingress (mean 0.08 Mbit/s)   Flow 3 egress (mean 0.08 Mbit/s)

Flow 1 (95th percentile 1619.92 ms)   Flow 2 (95th percentile 1610.93 ms)   Flow 3 (95th percentile 1680.55 ms)
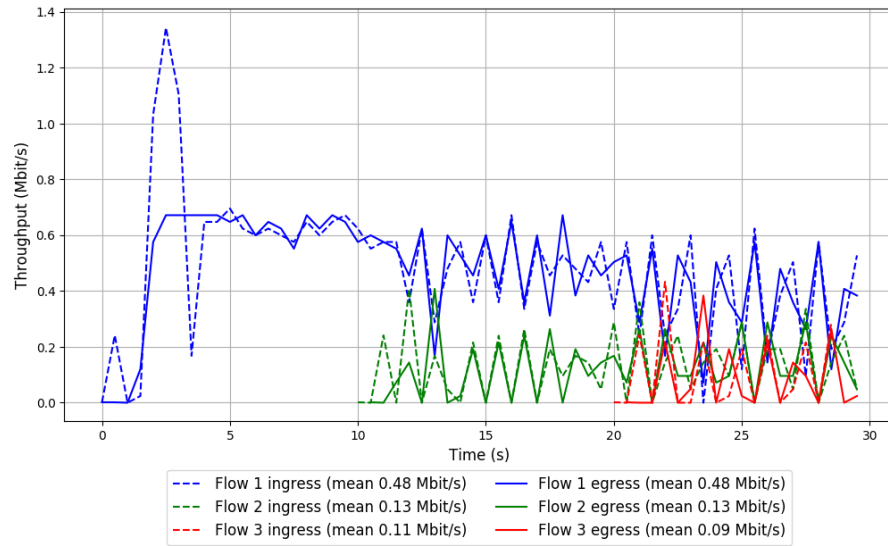
```
Run 2: Statistics of TCP Vegas

Start at: 2018-01-31 10:16:29
End at: 2018-01-31 10:16:59
Local clock offset: 0.231 ms
Remote clock offset: -5.945 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 963.013 ms
Loss rate: 2.79%
-- Flow 1:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 822.682 ms
Loss rate: 1.78%
-- Flow 2:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 933.450 ms
Loss rate: 1.43%
-- Flow 3:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 1053.813 ms
Loss rate: 7.23%
```
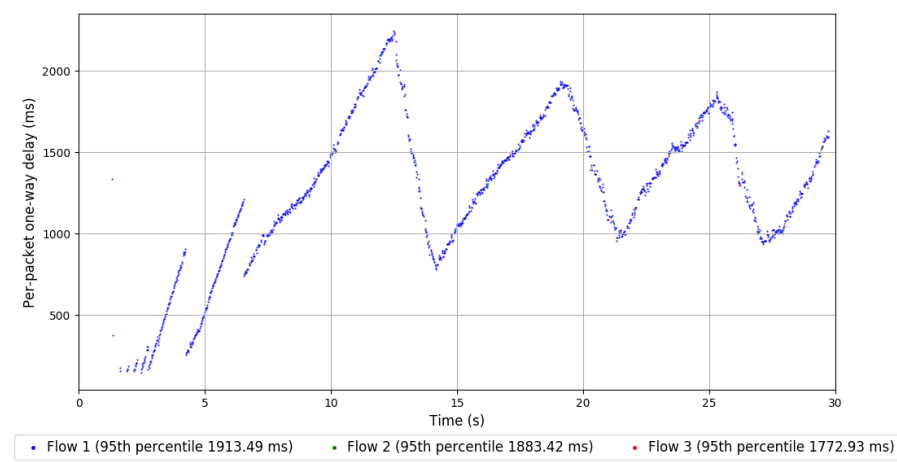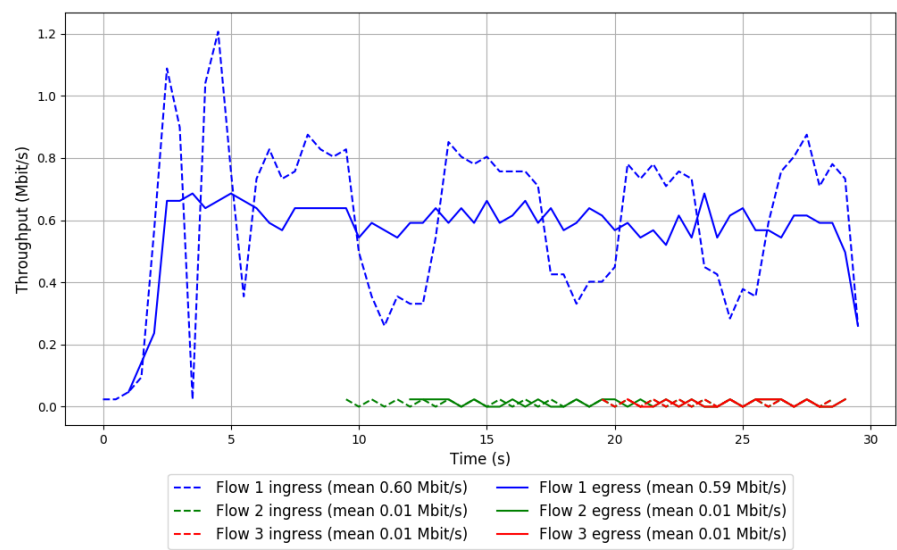
Run 2: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 0.27 Mbit/s)   Flow 1 egress (mean 0.27 Mbit/s)
Flow 2 ingress (mean 0.30 Mbit/s)   Flow 2 egress (mean 0.30 Mbit/s)
Flow 3 ingress (mean 0.37 Mbit/s)   Flow 3 egress (mean 0.36 Mbit/s)

Flow 1 (95th percentile 822.68 ms)   Flow 2 (95th percentile 933.45 ms)   Flow 3 (95th percentile 1053.81 ms)

```
Run 3: Statistics of TCP Vegas

Start at: 2018-01-31 10:39:09
End at: 2018-01-31 10:39:39
Local clock offset: 0.386 ms
Remote clock offset: -5.169 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 1272.676 ms
Loss rate: 4.20%
-- Flow 1:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 1251.127 ms
Loss rate: 2.83%
-- Flow 2:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 1291.259 ms
Loss rate: 7.79%
-- Flow 3:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 1282.654 ms
Loss rate: 15.14%
```

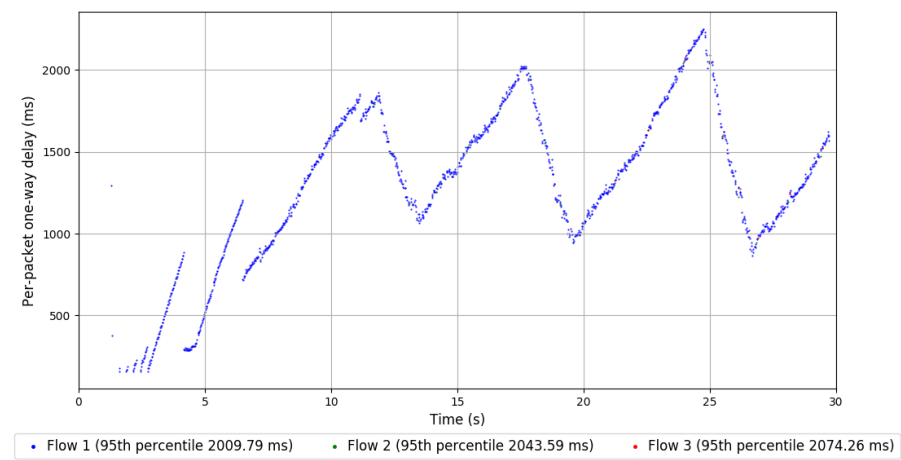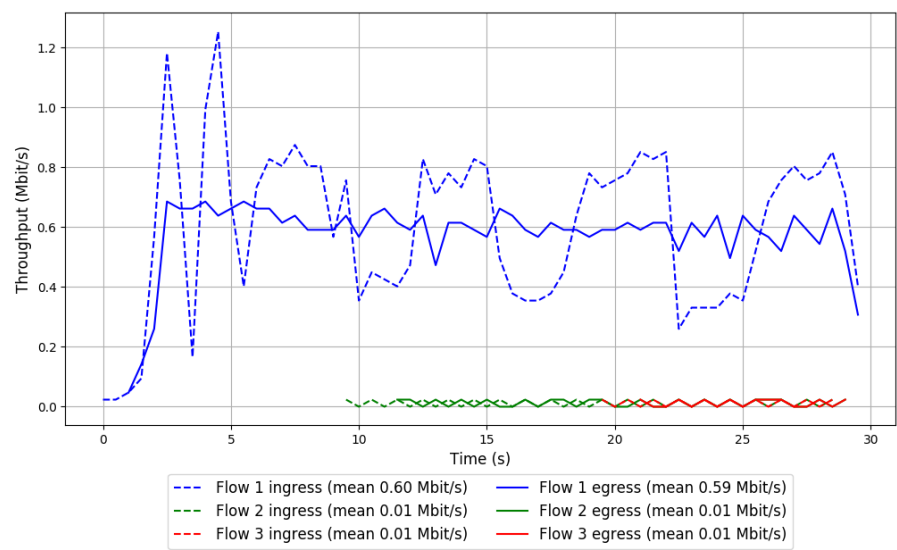Run 3: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2018-01-31 09:34:54
End at: 2018-01-31 09:35:24
Local clock offset: 0.16 ms
Remote clock offset: -4.892 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 1913.486 ms
Loss rate: 6.49%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1913.486 ms
Loss rate: 6.49%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1883.423 ms
Loss rate: 5.00%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1772.931 ms
Loss rate: 10.00%
```
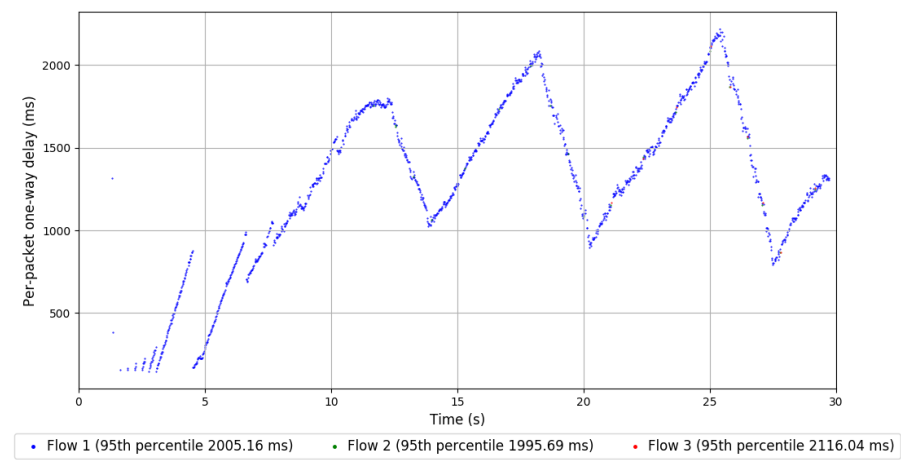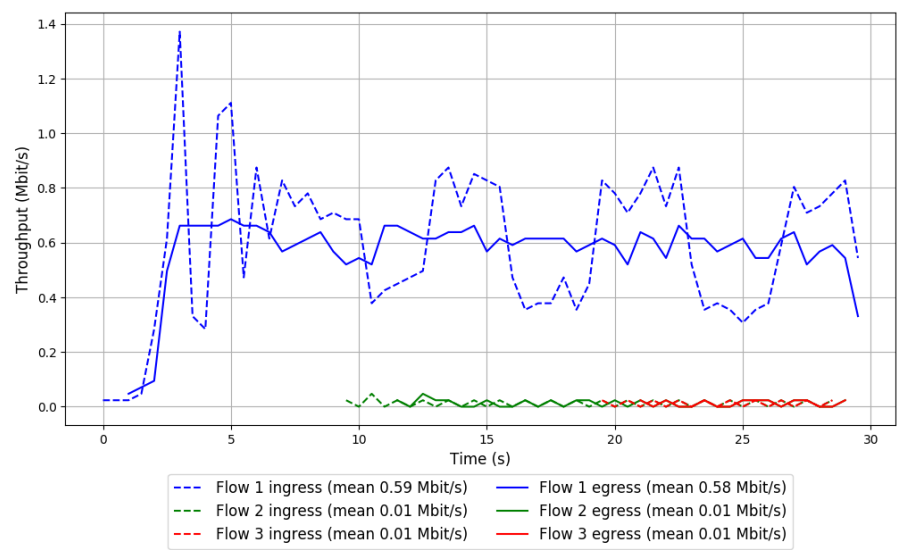
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-01-31 09:57:35
End at: 2018-01-31 09:58:05
Local clock offset: 0.298 ms
Remote clock offset: 0.887 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 2011.366 ms
Loss rate: 6.89%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 2009.787 ms
Loss rate: 6.89%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 2043.585 ms
Loss rate: 5.00%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 2074.258 ms
Loss rate: 10.00%
```
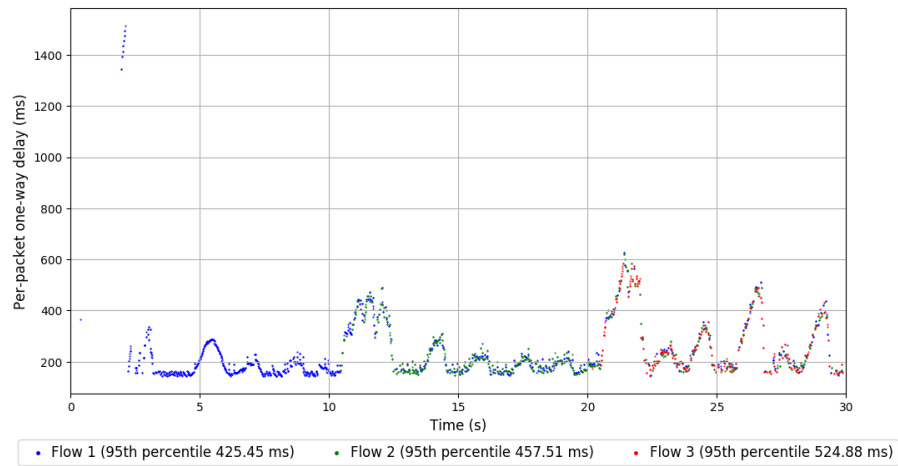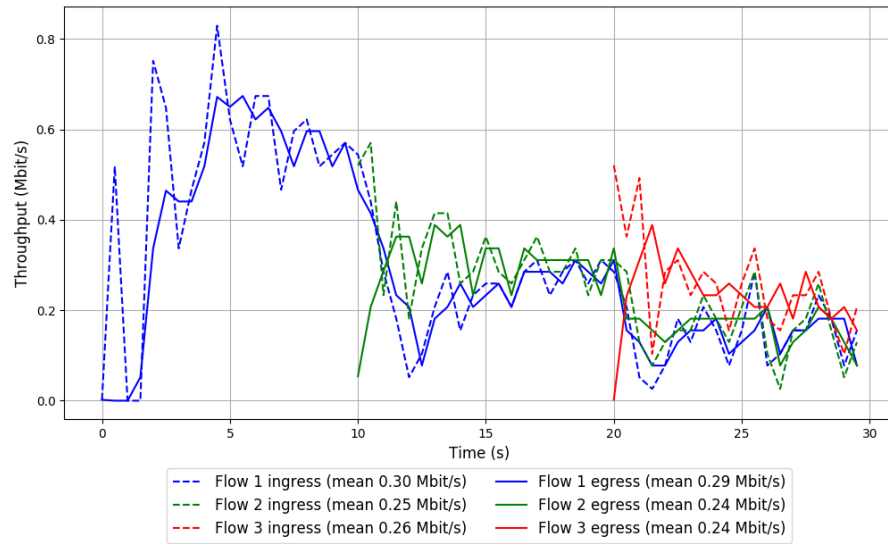
Run 2: Report of Verus — Data Link

- Flow 1 ingress (mean 0.60 Mbit/s)
- Flow 2 ingress (mean 0.01 Mbit/s)
- Flow 3 ingress (mean 0.01 Mbit/s)
- Flow 1 egress (mean 0.59 Mbit/s)
- Flow 2 egress (mean 0.01 Mbit/s)
- Flow 3 egress (mean 0.01 Mbit/s)

- Flow 1 (95th percentile 2009.79 ms)
- Flow 2 (95th percentile 2043.59 ms)
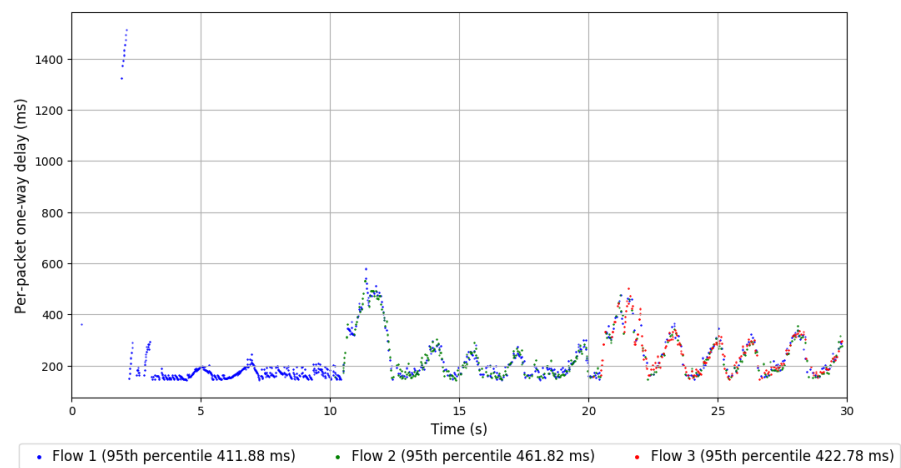- Flow 3 (95th percentile 2074.26 ms)

```
Run 3: Statistics of Verus

Start at: 2018-01-31 10:20:16
End at: 2018-01-31 10:20:46
Local clock offset: 0.227 ms
Remote clock offset: -0.246 ms

# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 2005.164 ms
Loss rate: 6.47%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 2005.164 ms
Loss rate: 6.47%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1995.690 ms
Loss rate: 4.76%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 2116.039 ms
Loss rate: 10.00%
```

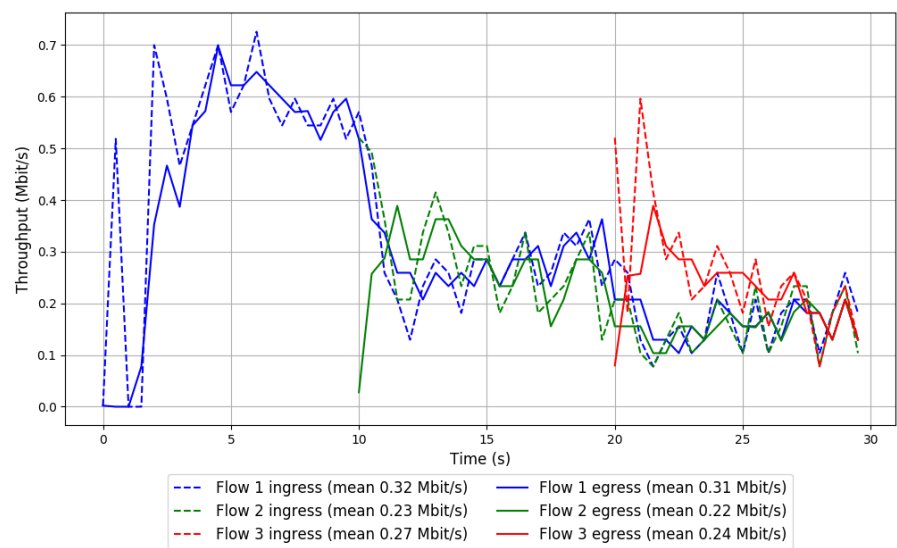Run 3: Report of Verus — Data Link

```
Run 1: Statistics of Copa

Start at: 2018-01-31 09:38:41
End at: 2018-01-31 09:39:11
Local clock offset: 0.182 ms
Remote clock offset: -5.839 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 471.198 ms
Loss rate: 6.46%
-- Flow 1:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 425.453 ms
Loss rate: 5.16%
-- Flow 2:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 457.507 ms
Loss rate: 6.96%
-- Flow 3:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 524.881 ms
Loss rate: 10.03%
```
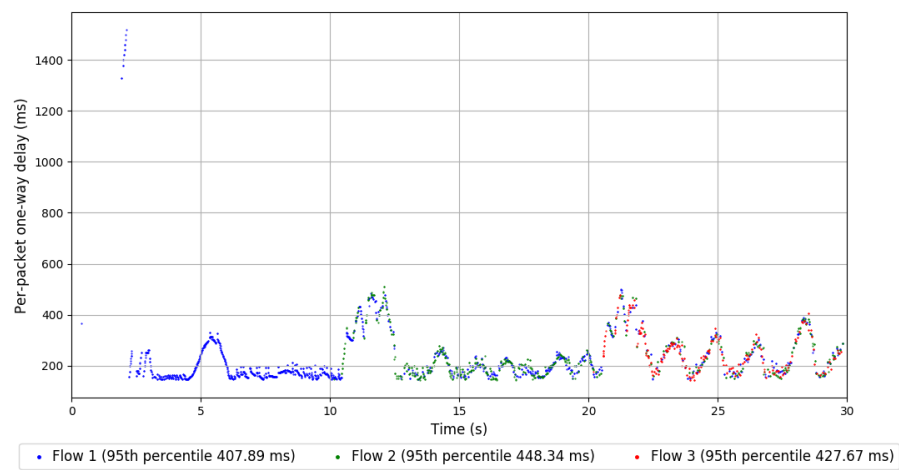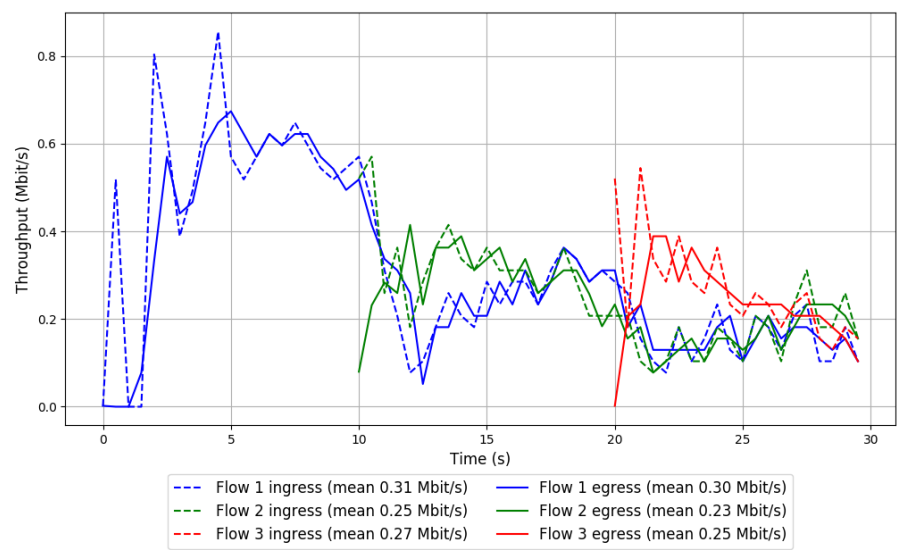
Run 1: Report of Copa — Data Link

```
Run 2: Statistics of Copa

Start at: 2018-01-31 10:01:21
End at: 2018-01-31 10:01:51
Local clock offset: 0.248 ms
Remote clock offset: -5.856 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 432.538 ms
Loss rate: 6.63%
-- Flow 1:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 411.878 ms
Loss rate: 5.19%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 461.819 ms
Loss rate: 6.03%
-- Flow 3:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 422.782 ms
Loss rate: 12.89%
```
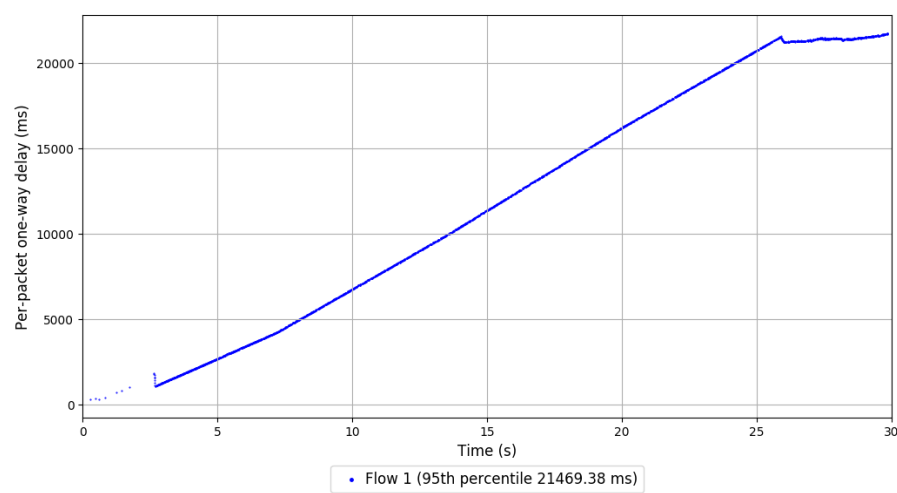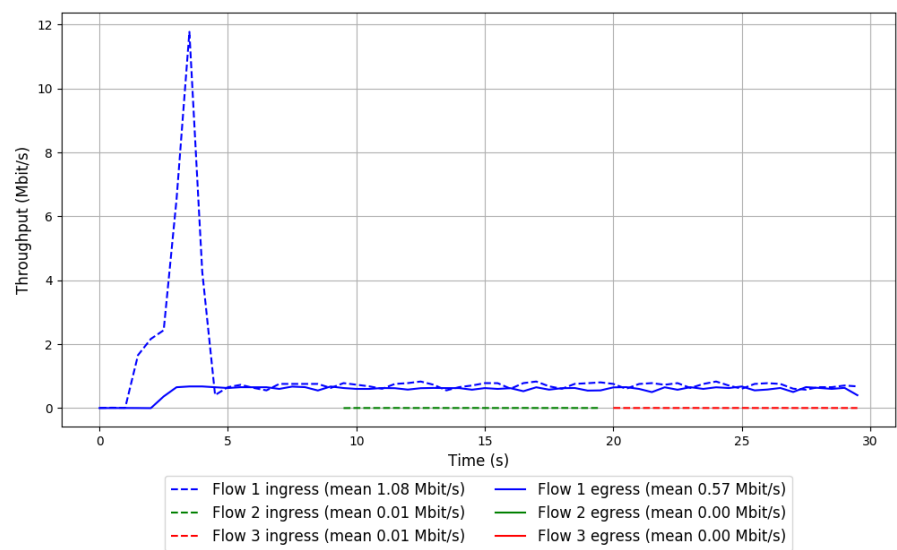
Run 2: Report of Copa — Data Link

Flow 1 ingress (mean 0.32 Mbit/s) --- Flow 1 egress (mean 0.31 Mbit/s)
Flow 2 ingress (mean 0.23 Mbit/s) --- Flow 2 egress (mean 0.22 Mbit/s)
Flow 3 ingress (mean 0.27 Mbit/s) --- Flow 3 egress (mean 0.24 Mbit/s)

Flow 1 (95th percentile 411.88 ms)   Flow 2 (95th percentile 461.82 ms)   Flow 3 (95th percentile 422.78 ms)
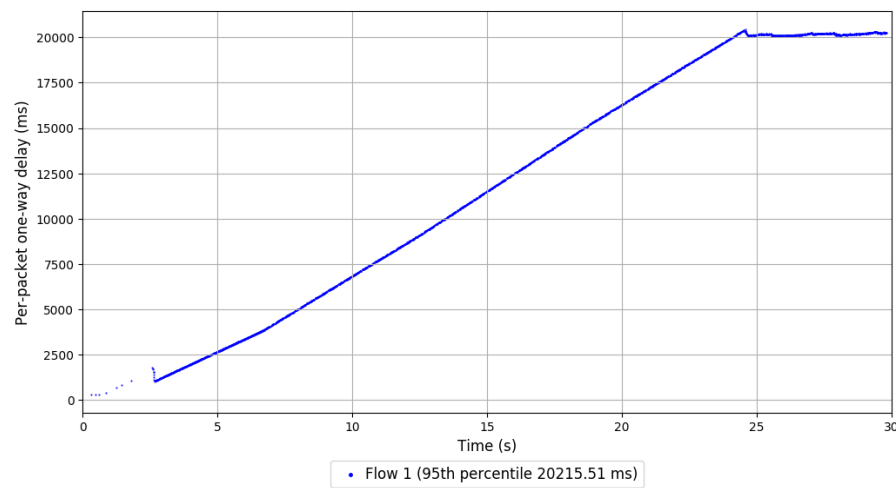
```
Run 3: Statistics of Copa

Start at: 2018-01-31 10:24:03
End at: 2018-01-31 10:24:33
Local clock offset: 0.213 ms
Remote clock offset: -5.005 ms

# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 420.950 ms
Loss rate: 6.50%
-- Flow 1:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 407.886 ms
Loss rate: 4.57%
-- Flow 2:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 448.337 ms
Loss rate: 6.88%
-- Flow 3:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 427.667 ms
Loss rate: 12.53%
```
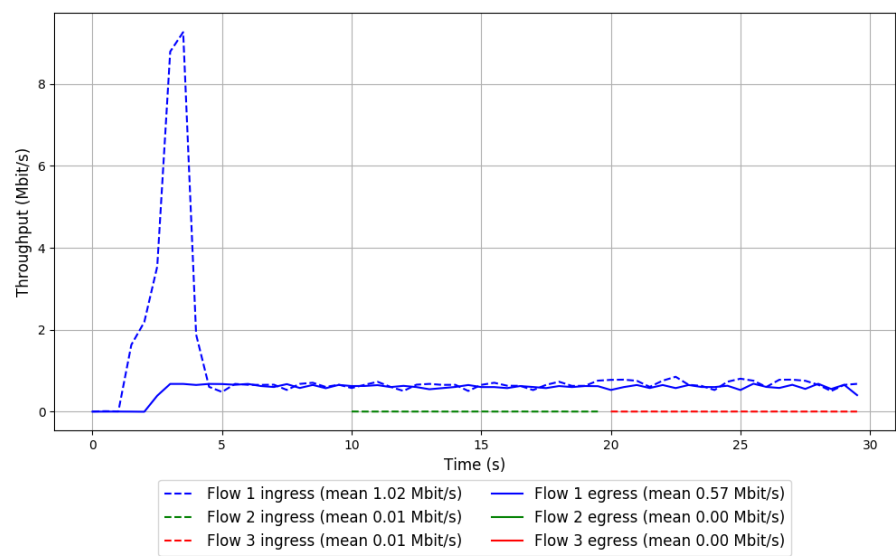
Run 3: Report of Copa — Data Link

```
Run 1: Statistics of FillP

Start at: 2018-01-31 09:42:27
End at: 2018-01-31 09:42:57
Local clock offset: 0.214 ms
Remote clock offset: -5.701 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 21469.382 ms
Loss rate: 48.40%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 21469.382 ms
Loss rate: 48.24%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```
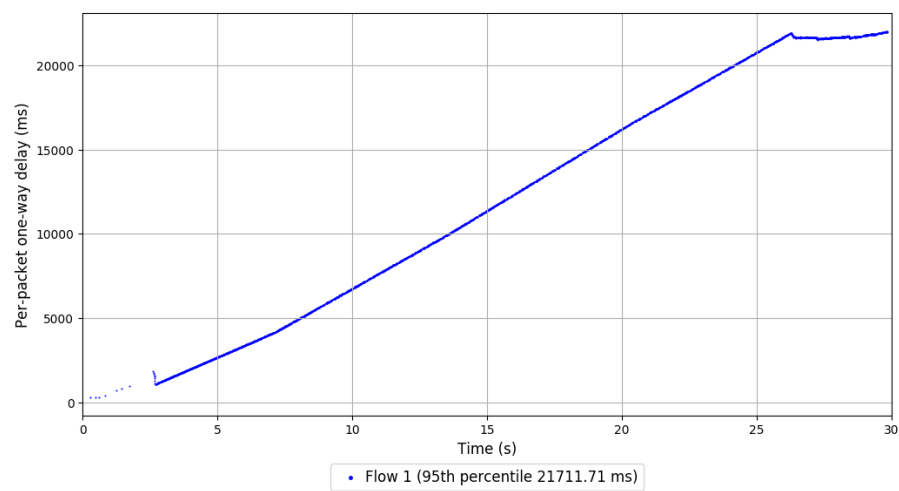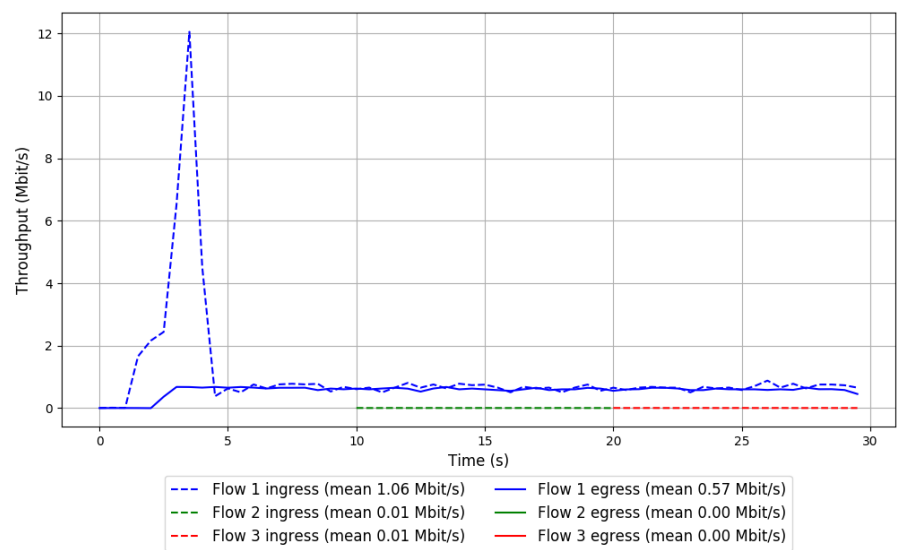
Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2018-01-31 10:05:08
End at: 2018-01-31 10:05:38
Local clock offset: 0.295 ms
Remote clock offset: -1.051 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20215.511 ms
Loss rate: 45.11%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20215.511 ms
Loss rate: 44.93%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```

Run 2: Report of FillP — Data Link

```
Run 3: Statistics of FillP

Start at: 2018-01-31 10:27:49
End at: 2018-01-31 10:28:19
Local clock offset: 0.239 ms
Remote clock offset: -0.226 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 21711.709 ms
Loss rate: 46.96%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 21711.709 ms
Loss rate: 46.79%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```
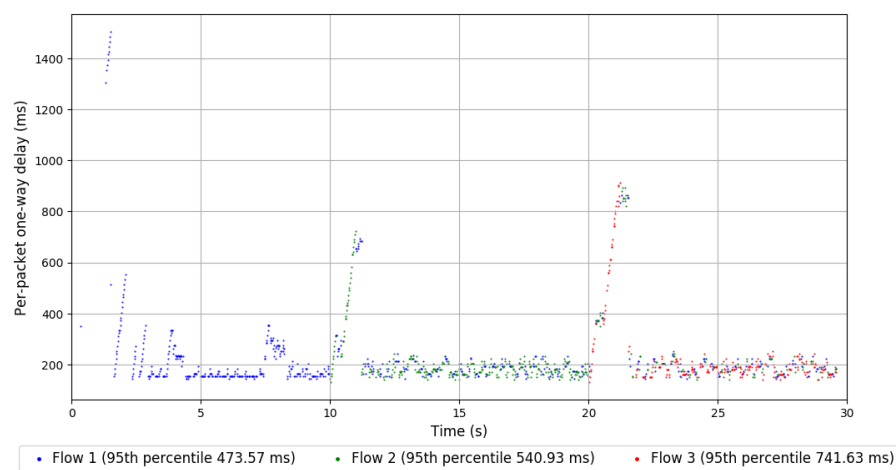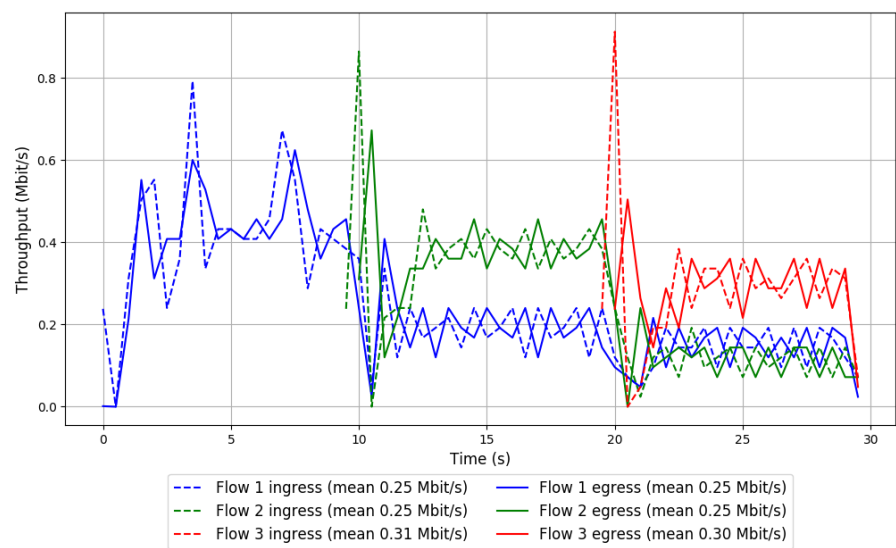
Run 3: Report of FillP — Data Link

```
Run 1: Statistics of Indigo-1-32

Start at: 2018-01-31 09:43:43
End at: 2018-01-31 09:44:13
Local clock offset: 0.195 ms
Remote clock offset: 0.967 ms


# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 590.408 ms
Loss rate: 2.48%
-- Flow 1:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 473.570 ms
Loss rate: 1.77%
-- Flow 2:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 540.935 ms
Loss rate: 1.91%
-- Flow 3:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 741.628 ms
Loss rate: 5.20%
```

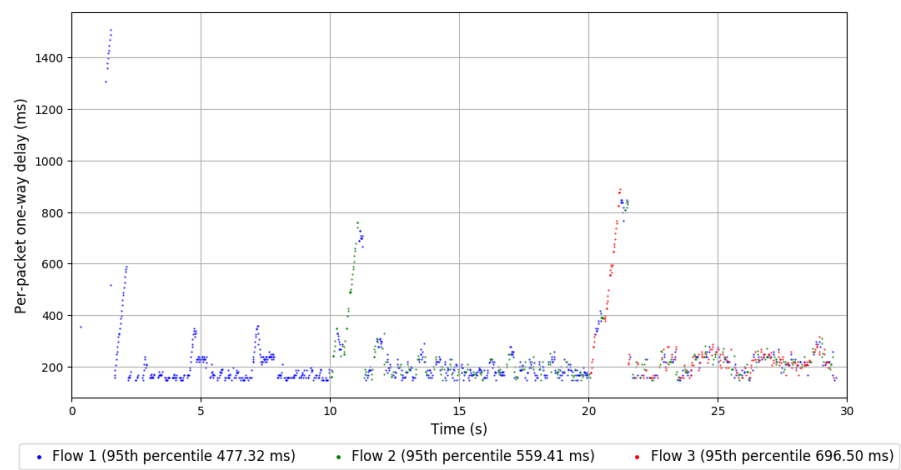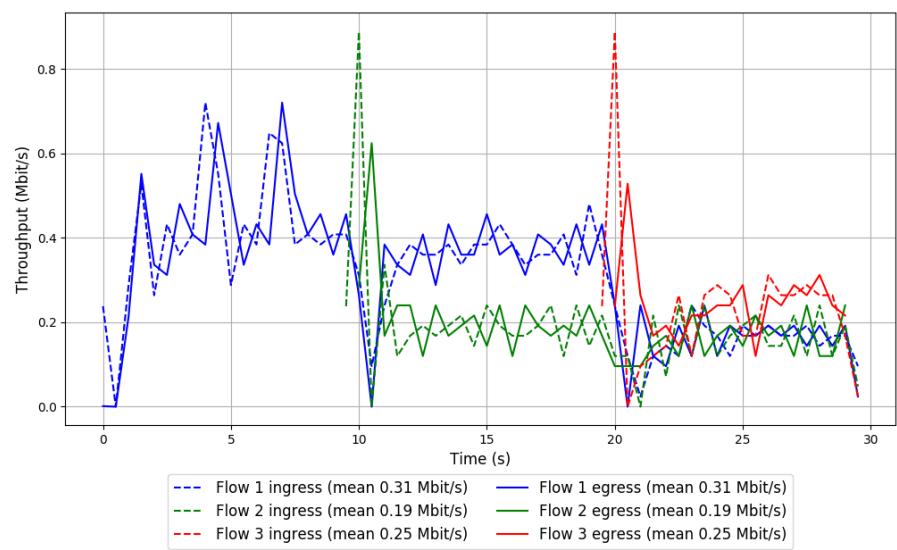## Run 1: Report of Indigo-1-32 — Data Link

```
Run 2: Statistics of Indigo-1-32

Start at: 2018-01-31 10:06:24
End at: 2018-01-31 10:06:54
Local clock offset: 0.282 ms
Remote clock offset: -0.154 ms

# Below is generated by plot.py at 2018-01-31 11:51:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.52 Mbit/s
95th percentile per-packet one-way delay: 579.265 ms
Loss rate: 2.34%
-- Flow 1:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 477.322 ms
Loss rate: 1.44%
-- Flow 2:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 559.407 ms
Loss rate: 3.46%
-- Flow 3:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 696.502 ms
Loss rate: 3.94%
```
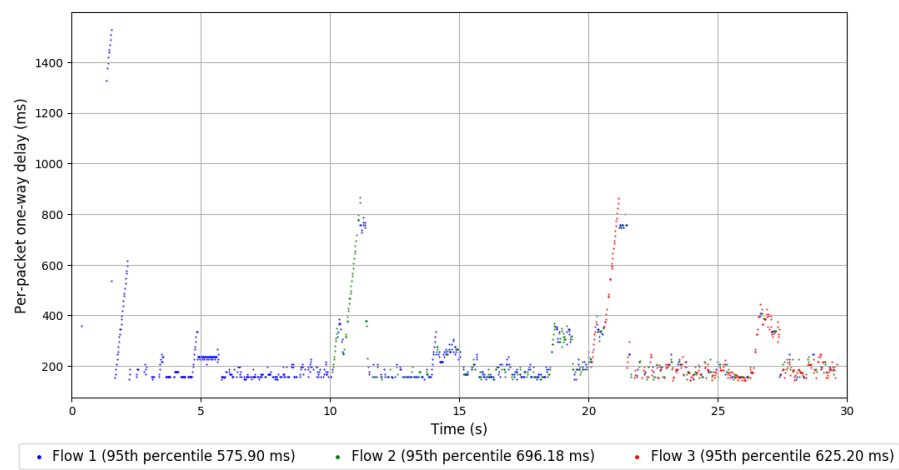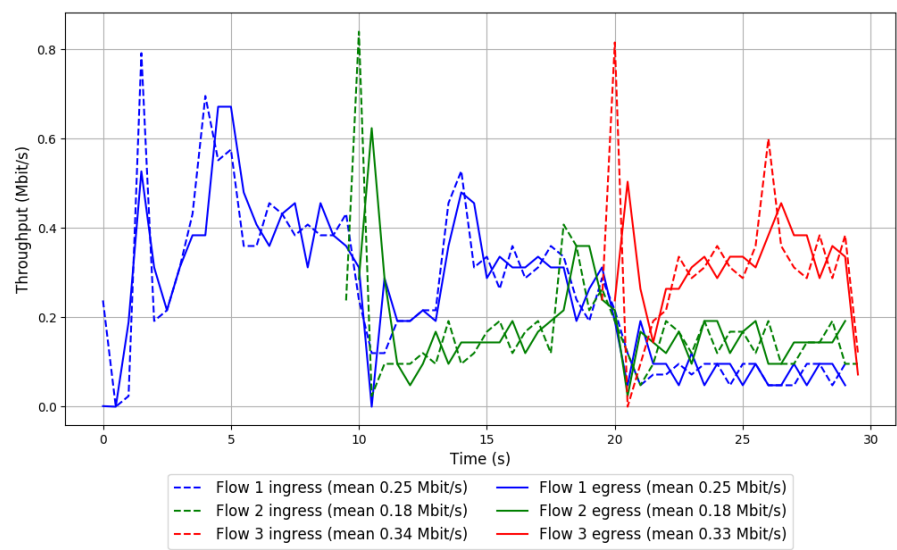
Run 2: Report of Indigo-1-32 — Data Link

Flow 1 ingress (mean 0.31 Mbit/s)   Flow 1 egress (mean 0.31 Mbit/s)
Flow 2 ingress (mean 0.19 Mbit/s)   Flow 2 egress (mean 0.19 Mbit/s)
Flow 3 ingress (mean 0.25 Mbit/s)   Flow 3 egress (mean 0.25 Mbit/s)

Flow 1 (95th percentile 477.32 ms)   Flow 2 (95th percentile 559.41 ms)   Flow 3 (95th percentile 696.50 ms)

```
Run 3: Statistics of Indigo-1-32

Start at: 2018-01-31 10:29:05
End at: 2018-01-31 10:29:35
Local clock offset: 0.261 ms
Remote clock offset: -0.088 ms


# Below is generated by plot.py at 2018-01-31 11:51:16
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 644.910 ms
Loss rate: 1.95%
-- Flow 1:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 575.901 ms
Loss rate: 1.13%
-- Flow 2:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 696.177 ms
Loss rate: 1.37%
-- Flow 3:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 625.203 ms
Loss rate: 4.40%
```

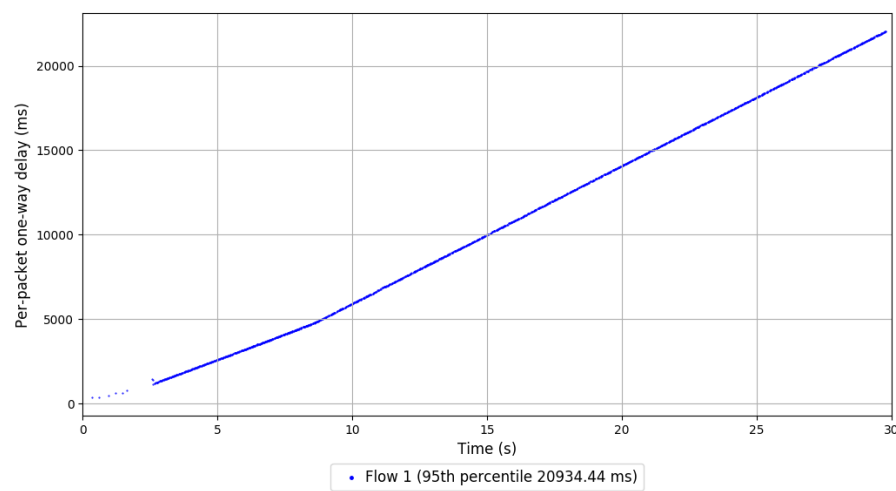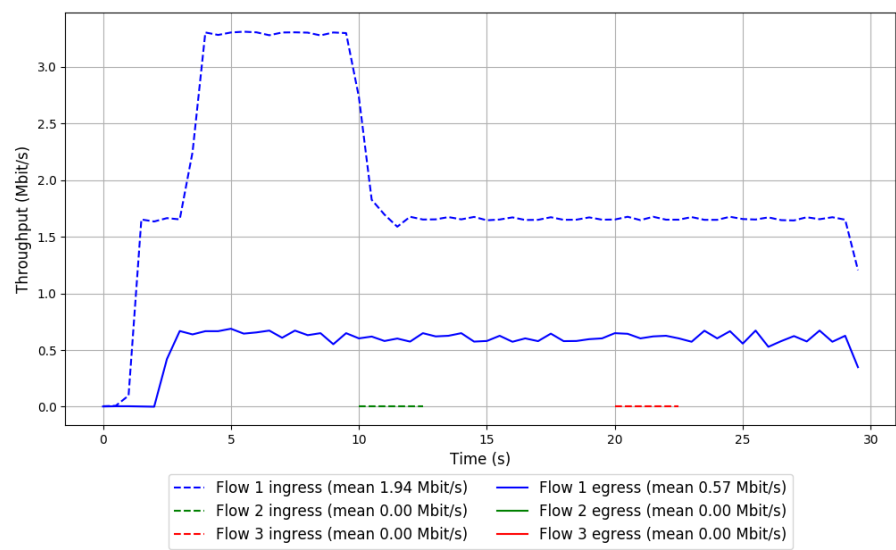Run 3: Report of Indigo-1-32 — Data Link

```
Run 1: Statistics of Vivace-latency

Start at: 2018-01-31 09:51:17
End at: 2018-01-31 09:51:47
Local clock offset: 0.262 ms
Remote clock offset: -5.788 ms


# Below is generated by plot.py at 2018-01-31 11:51:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20934.436 ms
Loss rate: 70.98%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20934.436 ms
Loss rate: 70.97%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```
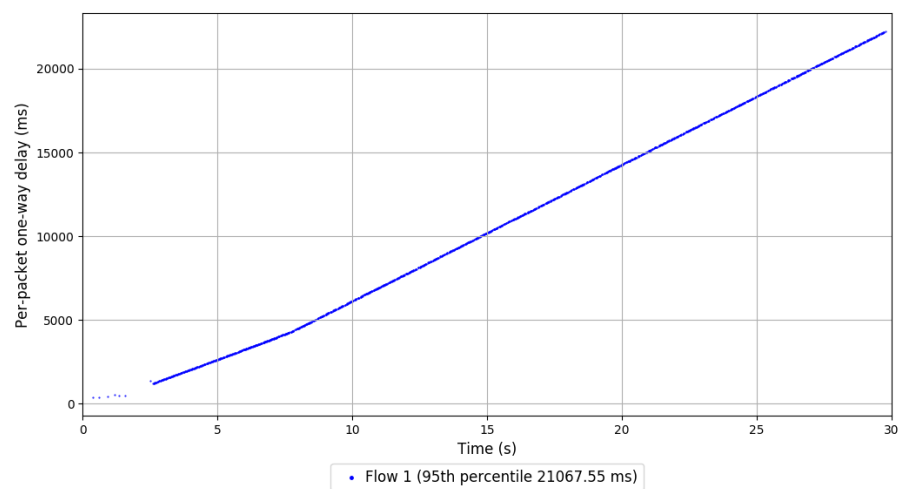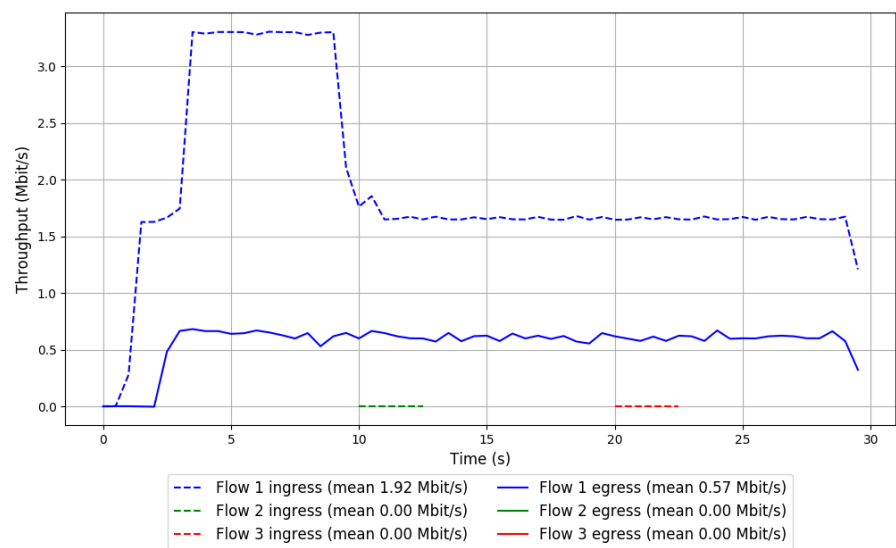
Run 1: Report of Vivace-latency — Data Link

Flow 1 ingress (mean 1.94 Mbit/s)
Flow 2 ingress (mean 0.00 Mbit/s)
Flow 3 ingress (mean 0.00 Mbit/s)
Flow 1 egress (mean 0.57 Mbit/s)
Flow 2 egress (mean 0.00 Mbit/s)
Flow 3 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile 20934.44 ms)

```
Run 2: Statistics of Vivace-latency

Start at: 2018-01-31 10:13:57
End at: 2018-01-31 10:14:27
Local clock offset: 0.259 ms
Remote clock offset: -5.88 ms


# Below is generated by plot.py at 2018-01-31 11:51:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 21067.549 ms
Loss rate: 70.70%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 21067.549 ms
Loss rate: 70.69%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```
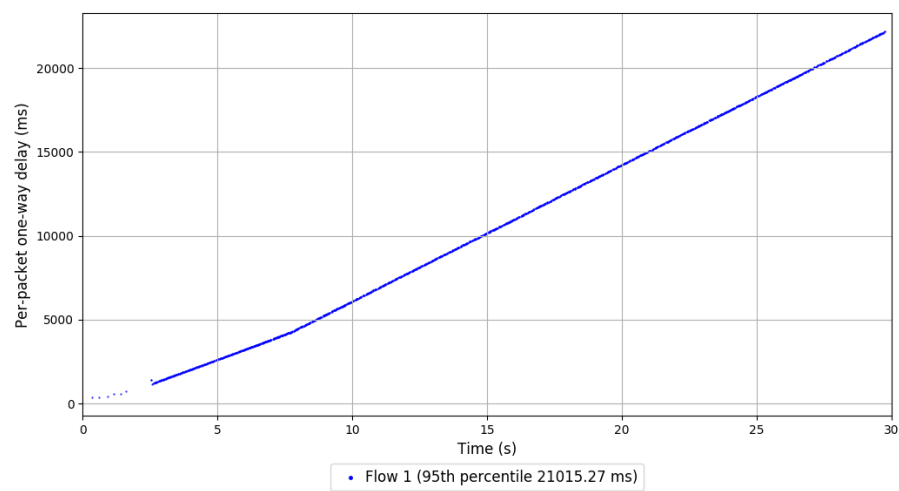
Run 2: Report of Vivace-latency — Data Link

```
Run 3: Statistics of Vivace-latency

Start at: 2018-01-31 10:36:38
End at: 2018-01-31 10:37:08
Local clock offset: 0.355 ms
Remote clock offset: 0.661 ms


# Below is generated by plot.py at 2018-01-31 11:51:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 21015.272 ms
Loss rate: 70.72%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 21015.272 ms
Loss rate: 70.71%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```
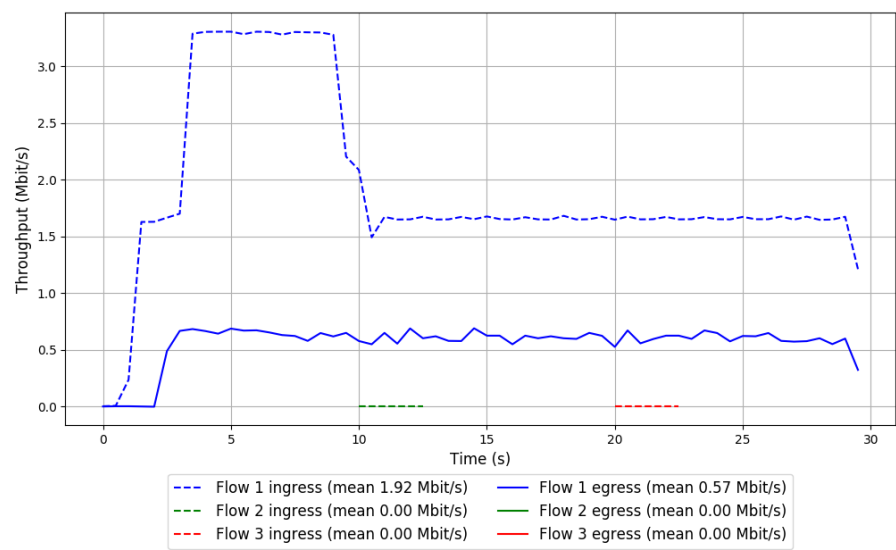
Run 3: Report of Vivace-latency — Data Link

```
Run 1: Statistics of Vivace-loss

Start at: 2018-01-31 09:55:03
End at: 2018-01-31 09:55:33
Local clock offset: 0.29 ms
Remote clock offset: -5.74 ms


# Below is generated by plot.py at 2018-01-31 11:51:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20688.672 ms
Loss rate: 89.02%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20688.672 ms
Loss rate: 89.02%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```
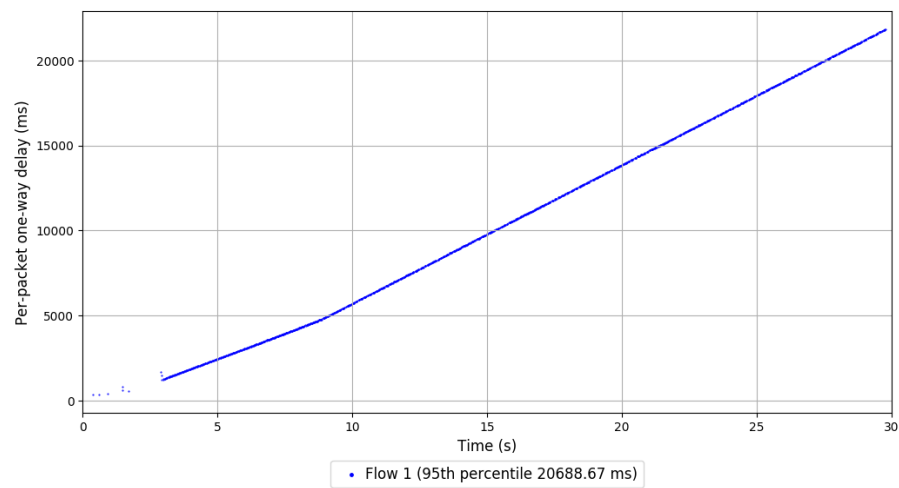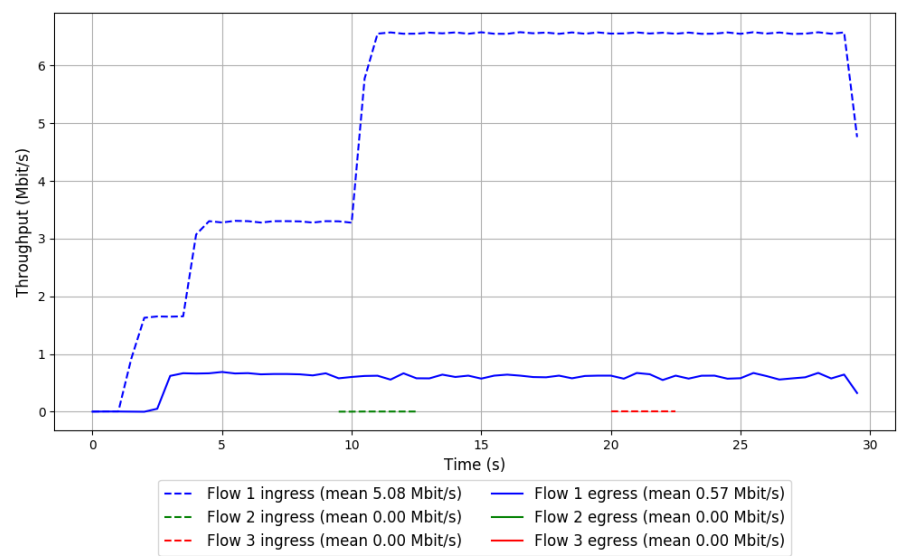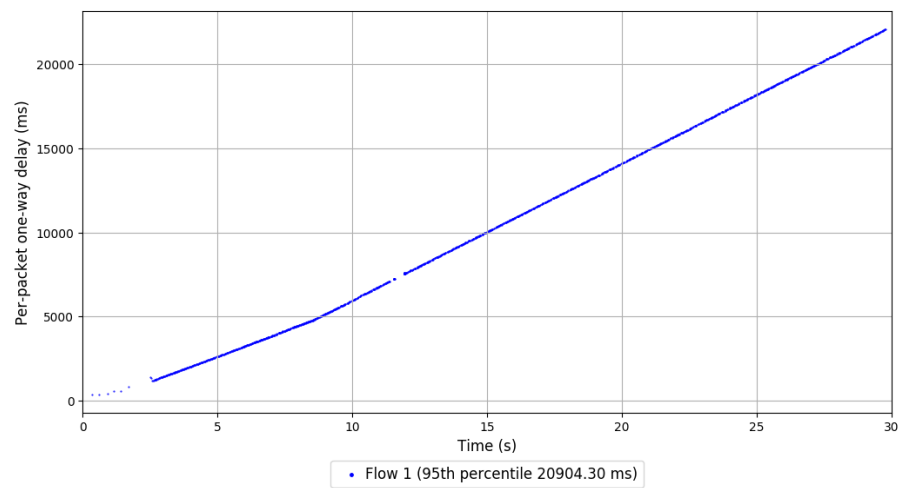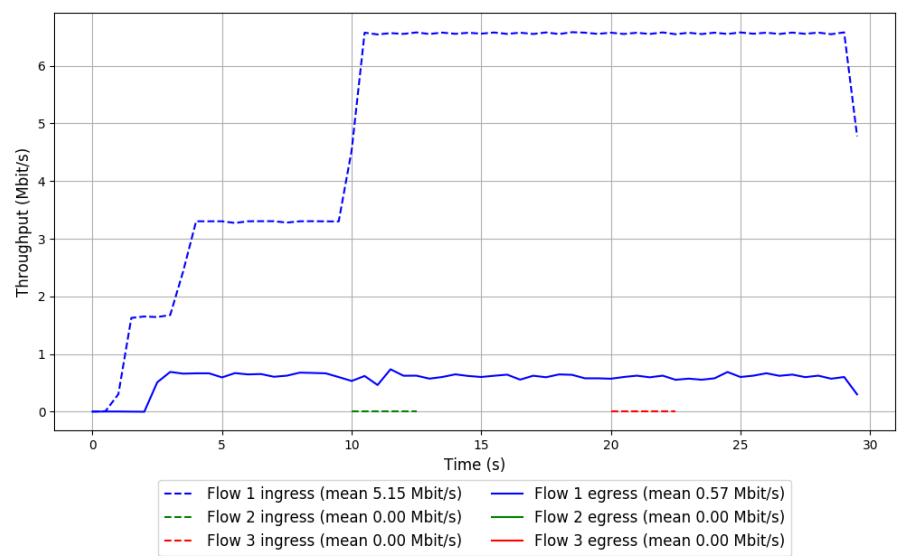
Run 1: Report of Vivace-loss — Data Link

```
Run 2: Statistics of Vivace-loss

Start at: 2018-01-31 10:17:44
End at: 2018-01-31 10:18:14
Local clock offset: 0.233 ms
Remote clock offset: -5.084 ms


# Below is generated by plot.py at 2018-01-31 11:51:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20904.304 ms
Loss rate: 89.07%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20904.304 ms
Loss rate: 89.07%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```
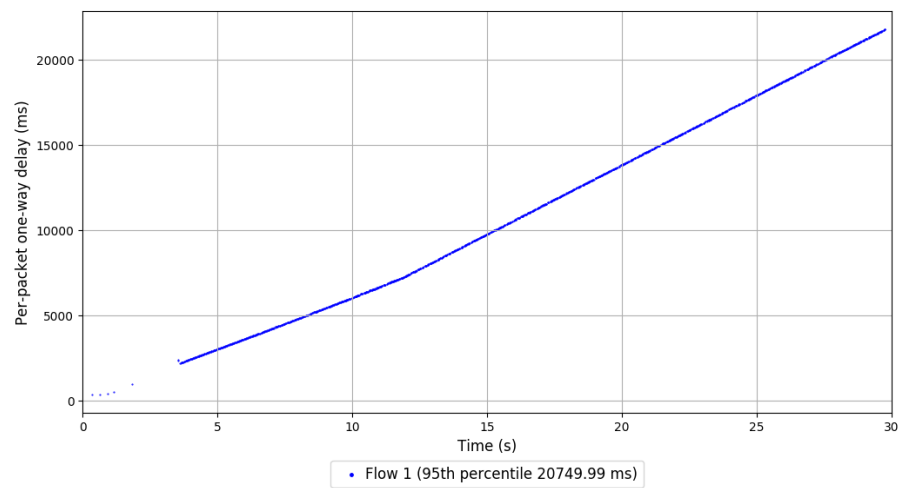
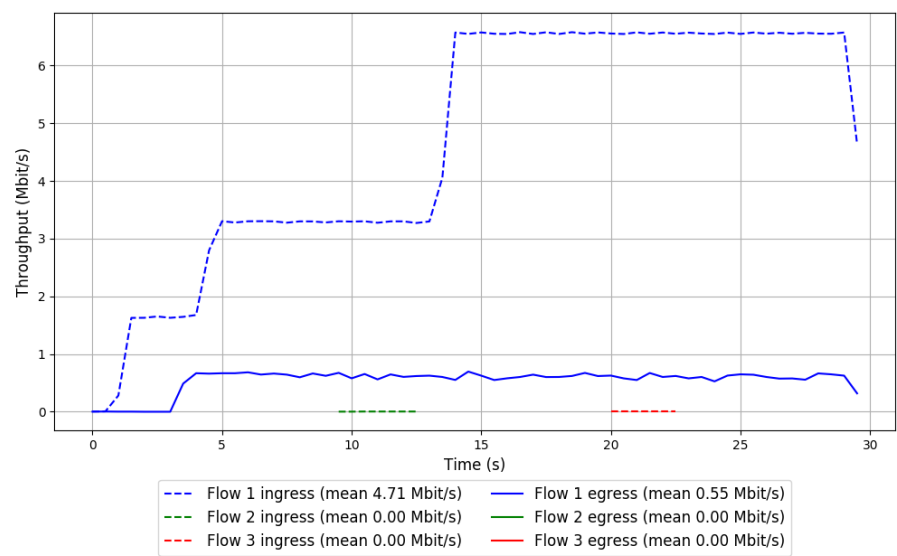Run 2: Report of Vivace-loss — Data Link

```
Run 3: Statistics of Vivace-loss

Start at: 2018-01-31 10:40:25
End at: 2018-01-31 10:40:55
Local clock offset: 0.401 ms
Remote clock offset: -6.148 ms


# Below is generated by plot.py at 2018-01-31 11:51:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 20749.987 ms
Loss rate: 88.45%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 20749.987 ms
Loss rate: 88.45%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```

Run 3: Report of Vivace-loss — Data Link

```
Run 1: Statistics of Vivace-LTE

Start at: 2018-01-31 09:39:56
End at: 2018-01-31 09:40:26
Local clock offset: 0.189 ms
Remote clock offset: 0.953 ms


# Below is generated by plot.py at 2018-01-31 11:51:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 21039.759 ms
Loss rate: 70.65%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 21039.759 ms
Loss rate: 70.64%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```
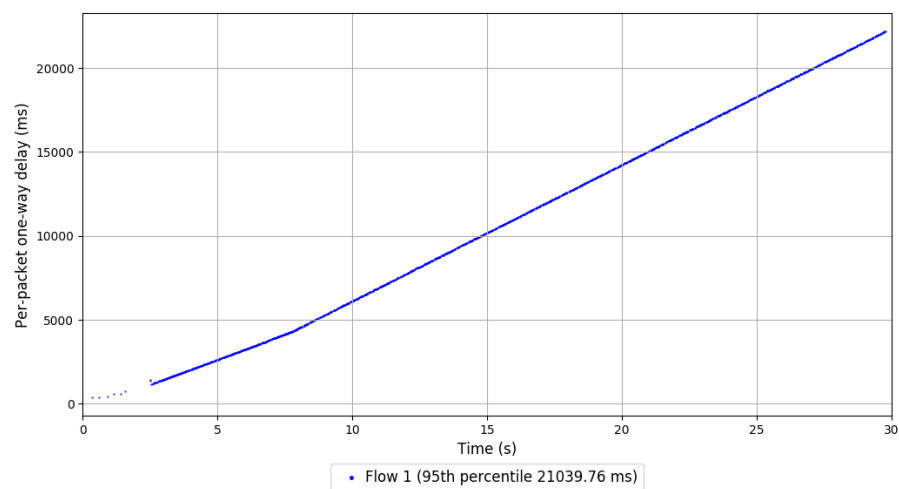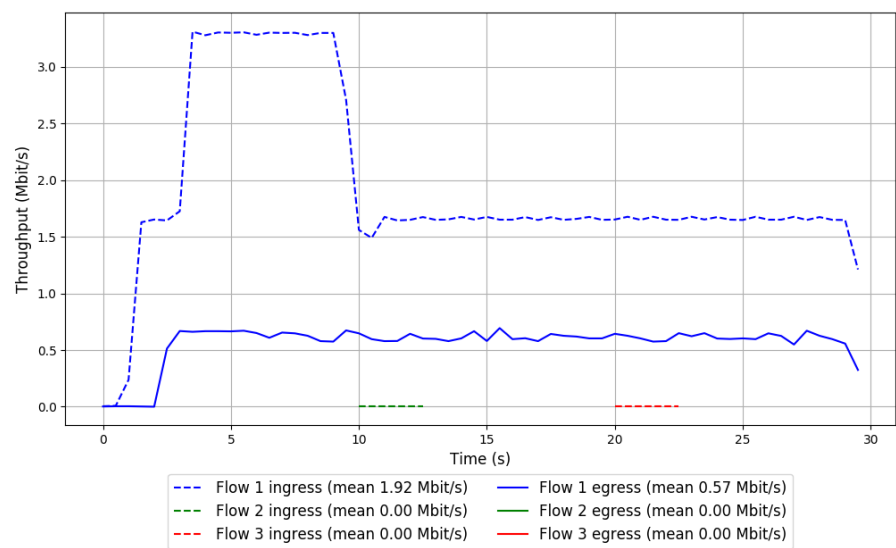
Run 1: Report of Vivace-LTE — Data Link

Flow 1 ingress (mean 1.92 Mbit/s) Flow 1 egress (mean 0.57 Mbit/s)
Flow 2 ingress (mean 0.00 Mbit/s) Flow 2 egress (mean 0.00 Mbit/s)
Flow 3 ingress (mean 0.00 Mbit/s) Flow 3 egress (mean 0.00 Mbit/s)

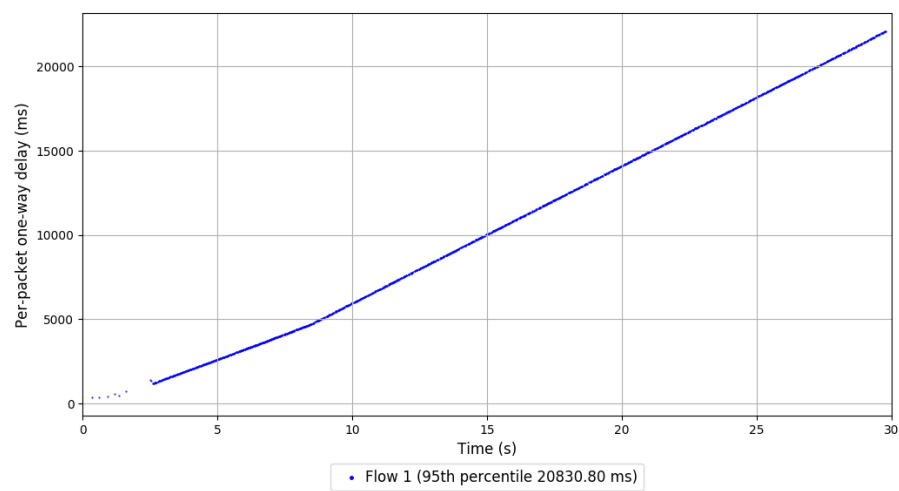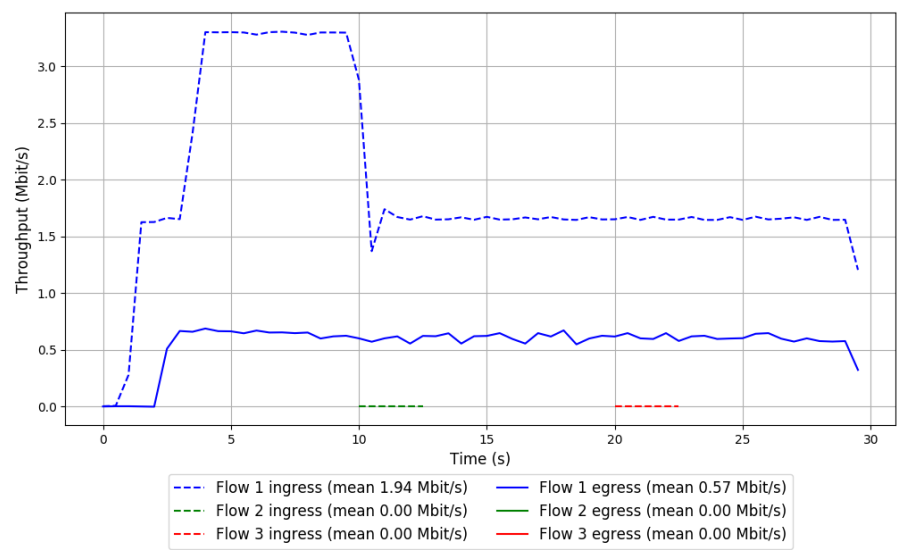• Flow 1 (95th percentile 21039.76 ms)

101

```
Run 2: Statistics of Vivace-LTE

Start at: 2018-01-31 10:02:37
End at: 2018-01-31 10:03:07
Local clock offset: 0.281 ms
Remote clock offset: -5.839 ms


# Below is generated by plot.py at 2018-01-31 11:51:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20830.800 ms
Loss rate: 70.91%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 20830.800 ms
Loss rate: 70.90%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```

Run 2: Report of Vivace-LTE — Data Link

```
Run 3: Statistics of Vivace-LTE

Start at: 2018-01-31 10:25:18
End at: 2018-01-31 10:25:48
Local clock offset: 0.21 ms
Remote clock offset: -1.09 ms


# Below is generated by plot.py at 2018-01-31 11:51:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 21060.748 ms
Loss rate: 70.69%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 21060.748 ms
Loss rate: 70.67%
-- Flow 2:
Average throughput: 0.00 Mbit/s
-- Flow 3:
Average throughput: 0.00 Mbit/s
```

Run 3: Report of Vivace-LTE — Data Link