Pantheon Report

Generated at 2019-01-03 02:11:17 (UTC).

Data path: AWS California 2 on ens5 (*local*) →Mexico on em1 (*remote*).

Repeated the test of 19 congestion control schemes 5 times.

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

NTP offsets were measured against `time.stanford.edu` and have been applied to correct the timestamps in logs.
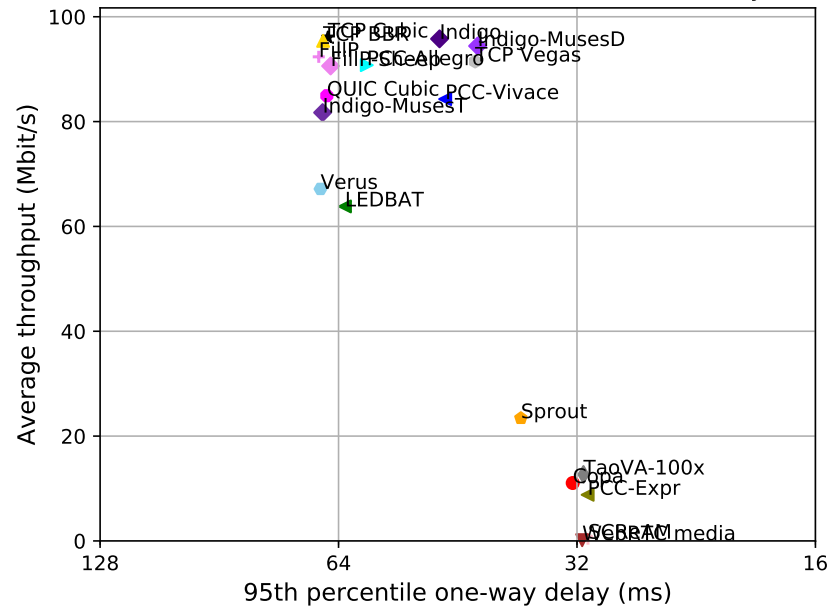
```
System info:
Linux 4.15.0-1029-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:
branch: muses @ c654af0b7d59d4ef4b914cfac404e1fc2e96dc68
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/muses-refactored @ 31f8f0ba8ef8b1da76c2bc0cd0a7850c33ff64fb
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-quic @ 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
```
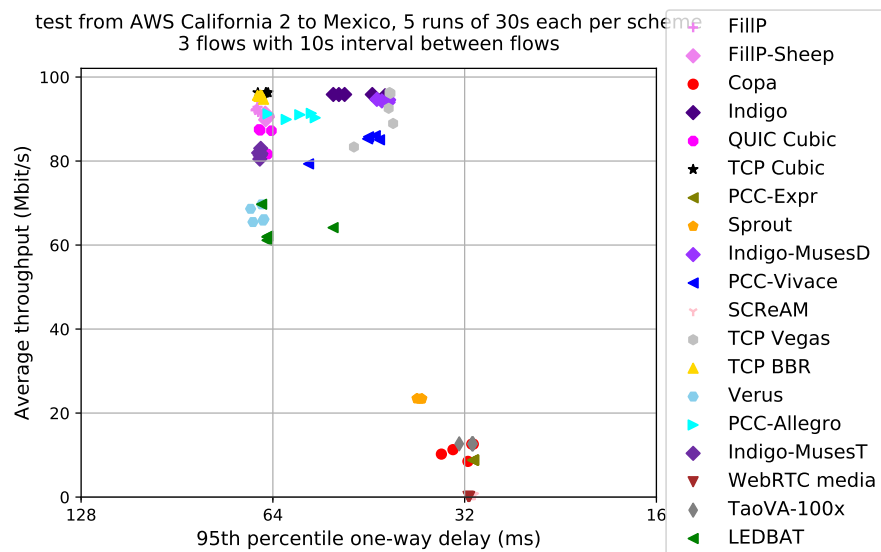
```
 M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

test from AWS California 2 to Mexico, 5 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)

test from AWS California 2 to Mexico, 5 runs of 30s each per scheme
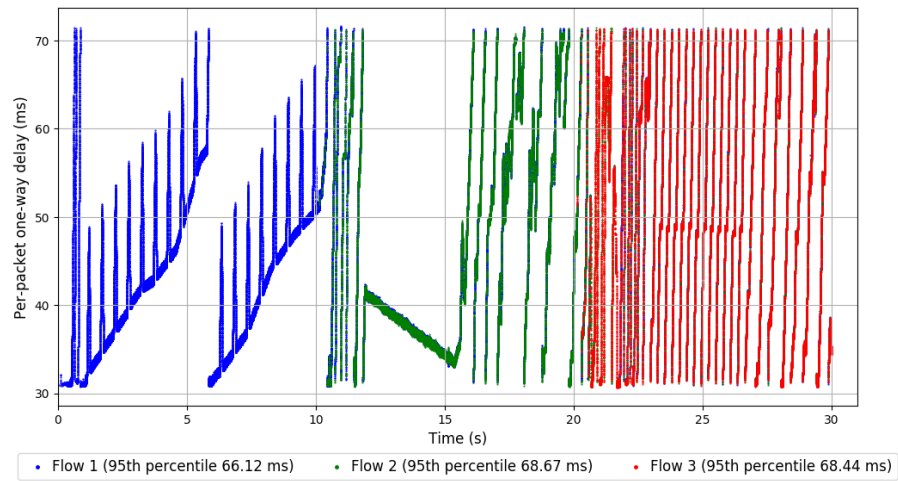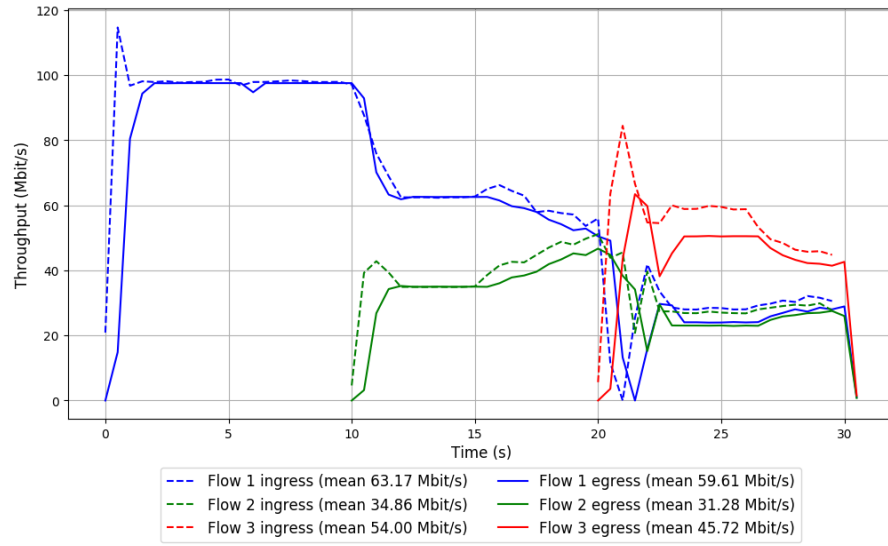3 flows with 10s interval between flows

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	5	59.32	34.36	39.71	65.58	67.95	67.93	6.11	11.03	14.29
Copa	5	9.58	8.52	4.42	38.58	31.47	30.91	75.74	74.96	78.78
TCP Cubic	5	70.58	29.61	17.26	65.31	66.72	67.96	0.83	0.56	0.69
FillP	5	57.81	42.52	19.06	66.39	68.87	68.50	29.24	46.44	53.27
FillP-Sheep	5	55.77	39.15	26.61	63.92	67.01	66.14	8.54	16.78	18.56
Indigo	5	66.93	27.61	32.25	44.44	49.72	54.45	0.03	0.04	0.16
Indigo-MusesD	5	58.55	30.11	48.08	42.75	44.00	40.53	0.68	0.04	0.01
Indigo-MusesT	5	42.15	44.05	34.67	67.54	65.78	67.53	41.11	27.47	35.70
LEDBAT	5	38.99	27.88	18.99	62.37	63.61	57.94	0.17	0.31	0.21
PCC-Allegro	5	79.22	12.53	9.74	58.38	61.77	61.07	2.18	2.20	2.90
PCC-Expr	5	0.03	10.35	5.80	30.98	31.02	31.05	85.71	48.10	33.87
QUIC Cubic	5	61.40	25.80	19.50	66.40	66.09	64.45	2.16	0.84	0.69
SCReAM	5	0.21	0.21	0.22	30.99	30.97	30.96	0.00	0.00	0.00
Sprout	5	11.81	11.72	11.56	37.29	37.93	38.16	0.02	0.00	0.03
TaoVA-100x	5	7.07	5.84	7.90	32.49	31.72	30.97	81.40	64.03	83.12
TCP Vegas	5	61.93	34.53	19.60	42.64	41.35	40.34	0.53	0.20	0.00
Verus	5	39.11	36.52	13.27	67.61	67.11	66.28	39.23	42.36	35.63
PCC-Vivace	5	61.86	25.35	16.87	45.74	49.20	50.63	0.08	0.18	0.36
WebRTC media	5	0.05	0.05	0.05	31.50	31.52	31.55	0.01	0.01	0.00

```
Run 1: Statistics of TCP BBR

Start at: 2019-01-03 00:22:58
End at: 2019-01-03 00:23:28
Local clock offset: 0.395 ms
Remote clock offset: -3.467 ms


# Below is generated by plot.py at 2019-01-03 02:02:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.63 Mbit/s
95th percentile per-packet one-way delay: 67.660 ms
Loss rate: 8.36%
-- Flow 1:
Average throughput: 59.61 Mbit/s
95th percentile per-packet one-way delay: 66.121 ms
Loss rate: 5.63%
-- Flow 2:
Average throughput: 31.28 Mbit/s
95th percentile per-packet one-way delay: 68.673 ms
Loss rate: 10.33%
-- Flow 3:
Average throughput: 45.72 Mbit/s
95th percentile per-packet one-way delay: 68.443 ms
Loss rate: 15.44%
```
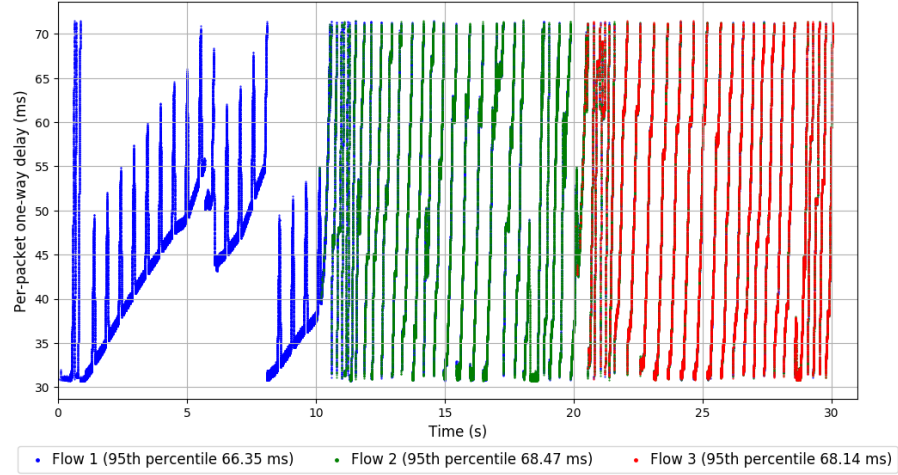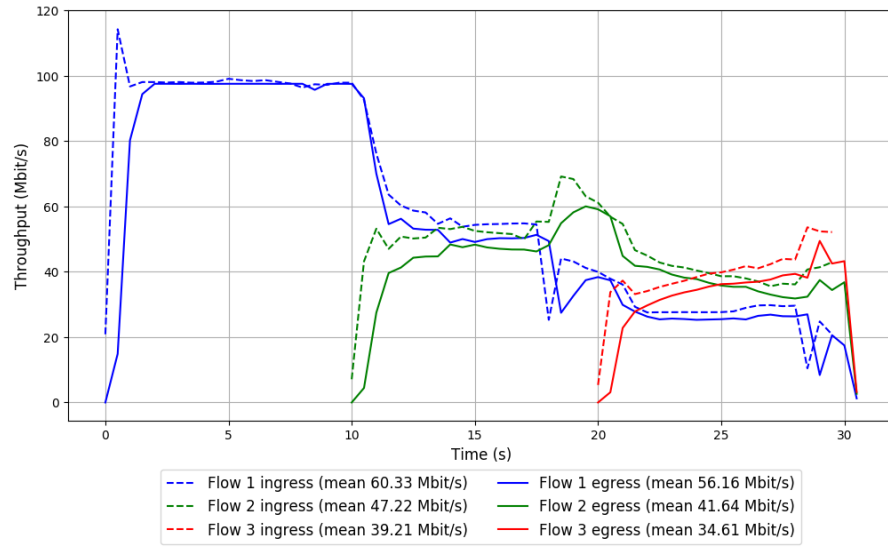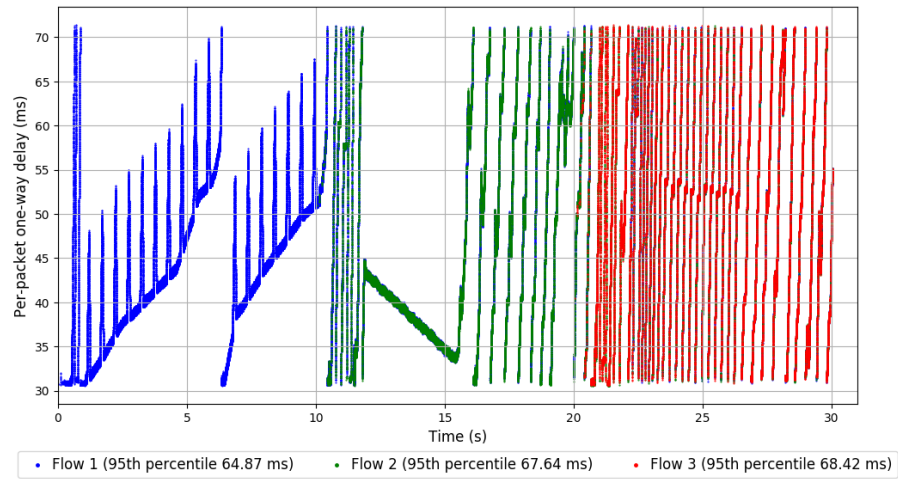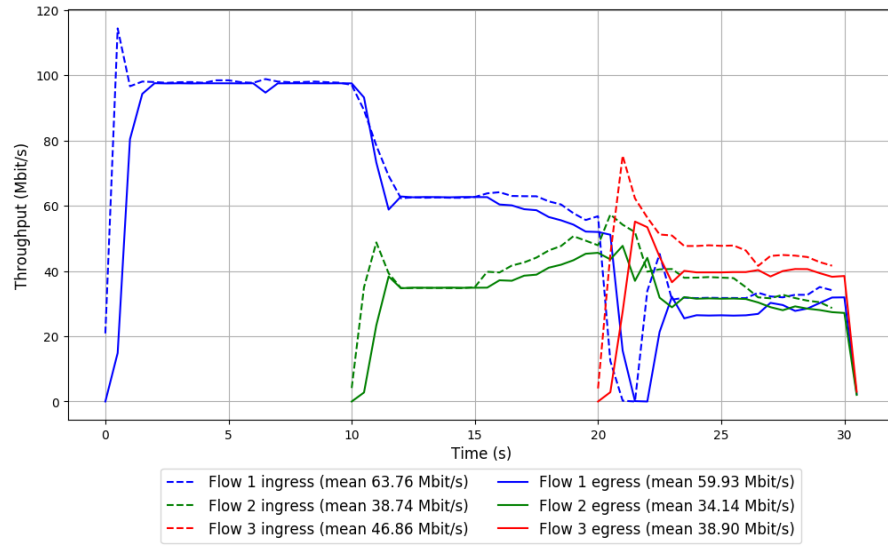
Run 1: Report of TCP BBR — Data Link

Flow 1 ingress (mean 63.17 Mbit/s) --- Flow 1 egress (mean 59.61 Mbit/s)
Flow 2 ingress (mean 34.86 Mbit/s) --- Flow 2 egress (mean 31.28 Mbit/s)
Flow 3 ingress (mean 54.00 Mbit/s) --- Flow 3 egress (mean 45.72 Mbit/s)

Flow 1 (95th percentile 66.12 ms)   Flow 2 (95th percentile 68.67 ms)   Flow 3 (95th percentile 68.44 ms)

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```
Run 2: Statistics of TCP BBR

Start at: 2019-01-03 00:46:07
End at: 2019-01-03 00:46:37
Local clock offset: 0.166 ms
Remote clock offset: -3.069 ms


# Below is generated by plot.py at 2019-01-03 02:02:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.39 Mbit/s
95th percentile per-packet one-way delay: 67.296 ms
Loss rate: 8.95%
-- Flow 1:
Average throughput: 56.16 Mbit/s
95th percentile per-packet one-way delay: 66.346 ms
Loss rate: 6.87%
-- Flow 2:
Average throughput: 41.64 Mbit/s
95th percentile per-packet one-way delay: 68.466 ms
Loss rate: 11.79%
-- Flow 3:
Average throughput: 34.61 Mbit/s
95th percentile per-packet one-way delay: 68.139 ms
Loss rate: 11.76%
```

Run 2: Report of TCP BBR — Data Link

- - - Flow 1 ingress (mean 60.33 Mbit/s) —— Flow 1 egress (mean 56.16 Mbit/s)
- - - Flow 2 ingress (mean 47.22 Mbit/s) —— Flow 2 egress (mean 41.64 Mbit/s)
- - - Flow 3 ingress (mean 39.21 Mbit/s) —— Flow 3 egress (mean 34.61 Mbit/s)

• Flow 1 (95th percentile 66.35 ms) • Flow 2 (95th percentile 68.47 ms) • Flow 3 (95th percentile 68.14 ms)

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```
Run 3: Statistics of TCP BBR

Start at: 2019-01-03 01:08:57
End at: 2019-01-03 01:09:27
Local clock offset: 0.262 ms
Remote clock offset: -3.026 ms


# Below is generated by plot.py at 2019-01-03 02:02:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.61 Mbit/s
95th percentile per-packet one-way delay: 66.607 ms
Loss rate: 9.00%
-- Flow 1:
Average throughput: 59.93 Mbit/s
95th percentile per-packet one-way delay: 64.866 ms
Loss rate: 5.93%
-- Flow 2:
Average throughput: 34.14 Mbit/s
95th percentile per-packet one-way delay: 67.640 ms
Loss rate: 11.86%
-- Flow 3:
Average throughput: 38.90 Mbit/s
95th percentile per-packet one-way delay: 68.421 ms
Loss rate: 16.88%
```
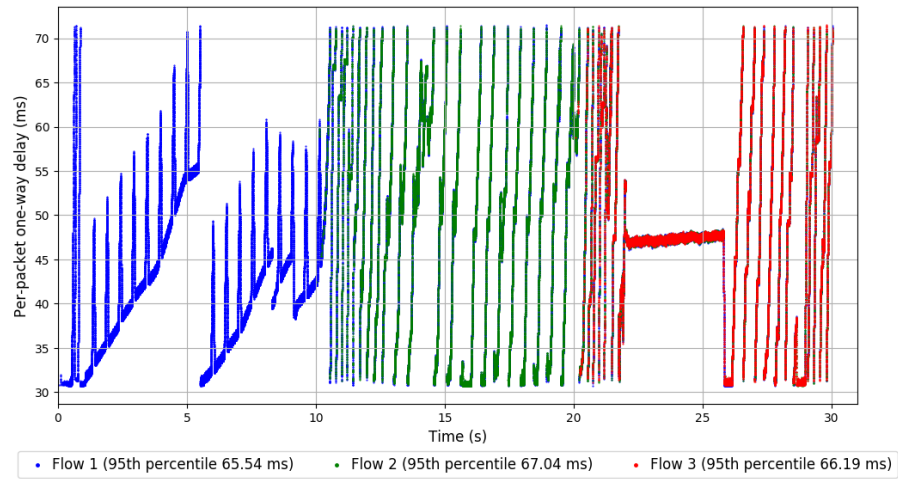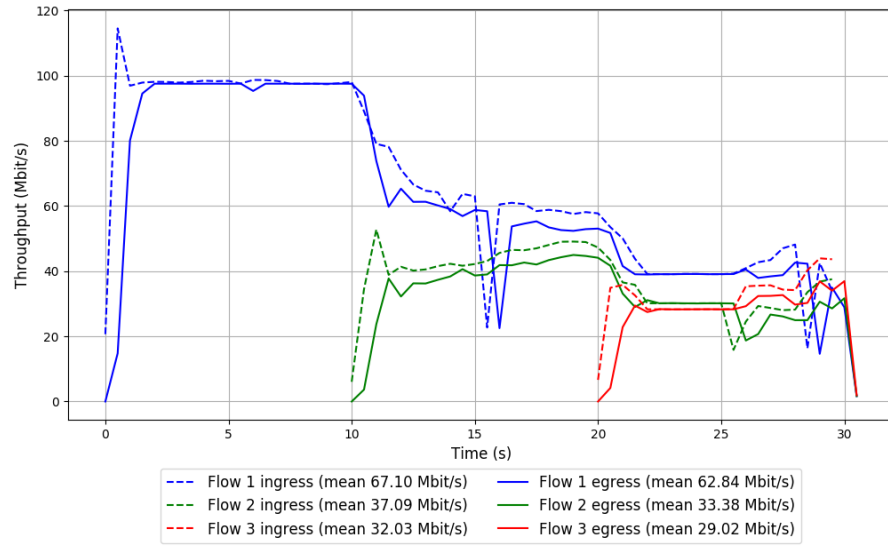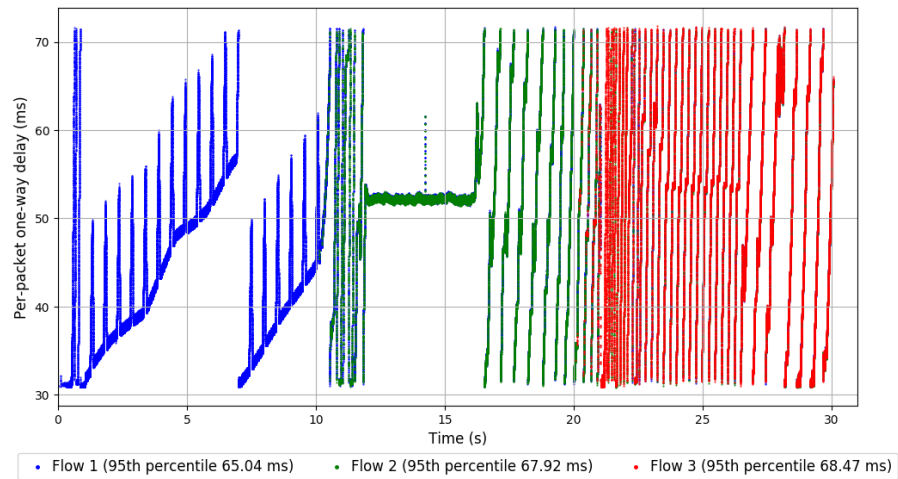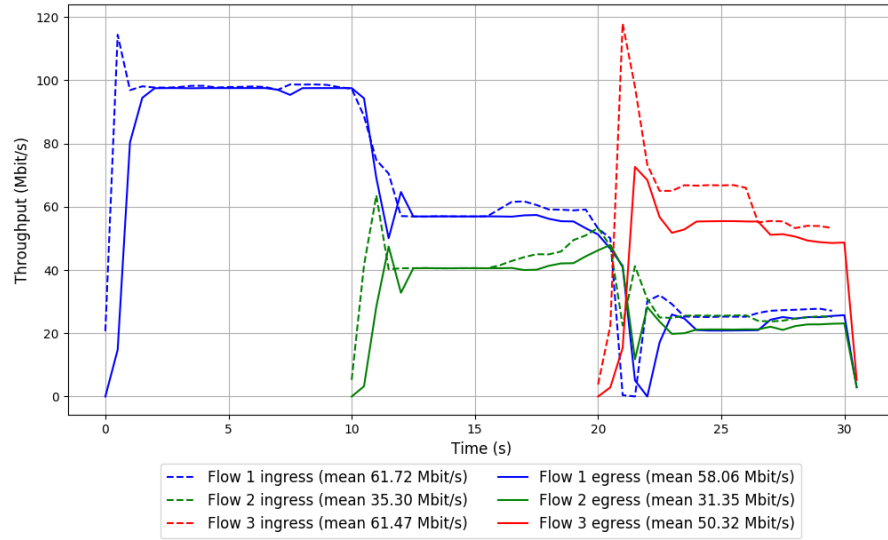
Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 63.76 Mbit/s) Flow 1 egress (mean 59.93 Mbit/s)
Flow 2 ingress (mean 38.74 Mbit/s) Flow 2 egress (mean 34.14 Mbit/s)
Flow 3 ingress (mean 46.86 Mbit/s) Flow 3 egress (mean 38.90 Mbit/s)

• Flow 1 (95th percentile 64.87 ms)   • Flow 2 (95th percentile 67.64 ms)   • Flow 3 (95th percentile 68.42 ms)

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```
Run 4: Statistics of TCP BBR

Start at: 2019-01-03 01:31:51
End at: 2019-01-03 01:32:21
Local clock offset: 0.27 ms
Remote clock offset: -2.64 ms


# Below is generated by plot.py at 2019-01-03 02:02:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.72 Mbit/s
95th percentile per-packet one-way delay: 66.184 ms
Loss rate: 7.53%
-- Flow 1:
Average throughput: 62.84 Mbit/s
95th percentile per-packet one-way delay: 65.536 ms
Loss rate: 6.30%
-- Flow 2:
Average throughput: 33.38 Mbit/s
95th percentile per-packet one-way delay: 67.040 ms
Loss rate: 9.99%
-- Flow 3:
Average throughput: 29.02 Mbit/s
95th percentile per-packet one-way delay: 66.188 ms
Loss rate: 9.52%
```
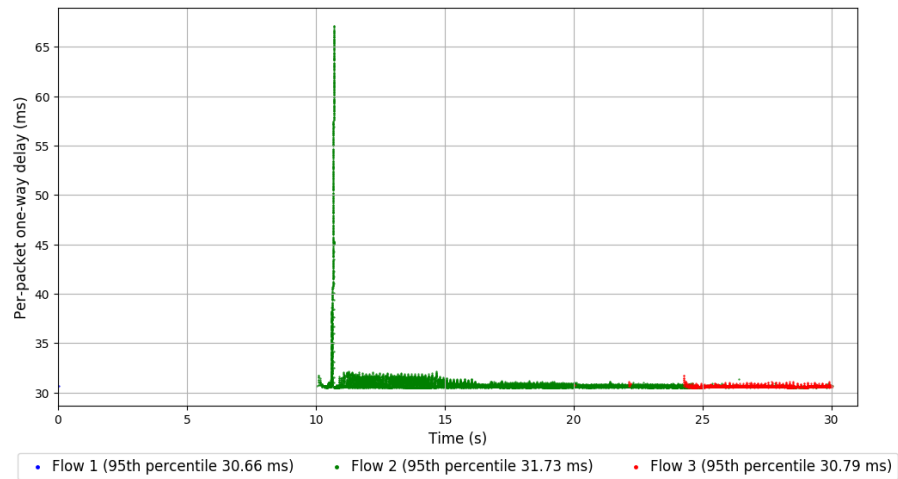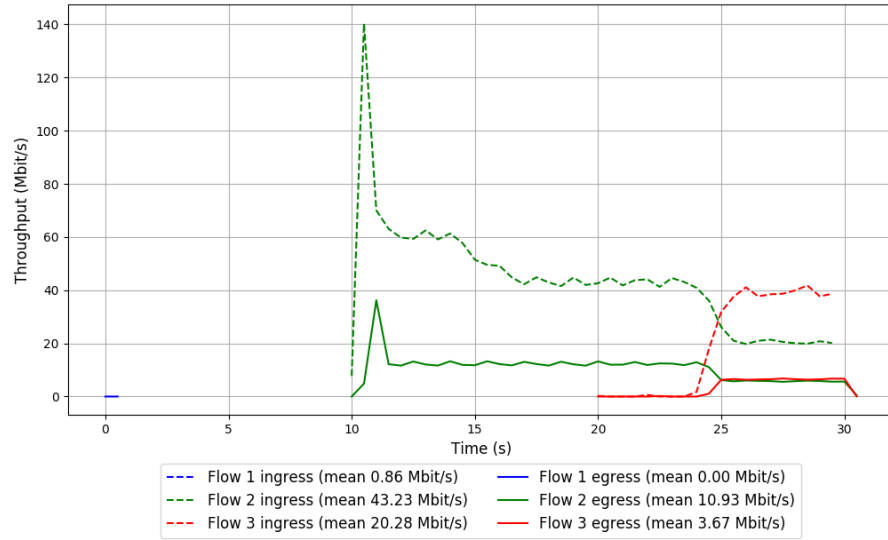
Run 4: Report of TCP BBR — Data Link

Flow 1 ingress (mean 67.10 Mbit/s) --- Flow 1 egress (mean 62.84 Mbit/s)
Flow 2 ingress (mean 37.09 Mbit/s) --- Flow 2 egress (mean 33.38 Mbit/s)
Flow 3 ingress (mean 32.03 Mbit/s) --- Flow 3 egress (mean 29.02 Mbit/s)

Flow 1 (95th percentile 65.54 ms)   •   Flow 2 (95th percentile 67.04 ms)   •   Flow 3 (95th percentile 66.19 ms)

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```
Run 5: Statistics of TCP BBR

Start at: 2019-01-03 01:55:09
End at: 2019-01-03 01:55:39
Local clock offset: 0.218 ms
Remote clock offset: -2.491 ms


# Below is generated by plot.py at 2019-01-03 02:02:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.69 Mbit/s
95th percentile per-packet one-way delay: 66.952 ms
Loss rate: 9.34%
-- Flow 1:
Average throughput: 58.06 Mbit/s
95th percentile per-packet one-way delay: 65.036 ms
Loss rate: 5.83%
-- Flow 2:
Average throughput: 31.35 Mbit/s
95th percentile per-packet one-way delay: 67.919 ms
Loss rate: 11.17%
-- Flow 3:
Average throughput: 50.32 Mbit/s
95th percentile per-packet one-way delay: 68.467 ms
Loss rate: 17.87%
```

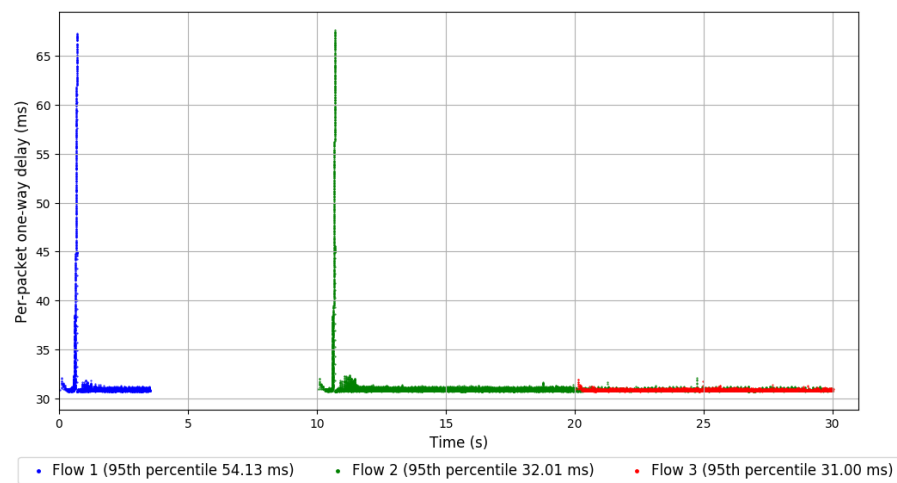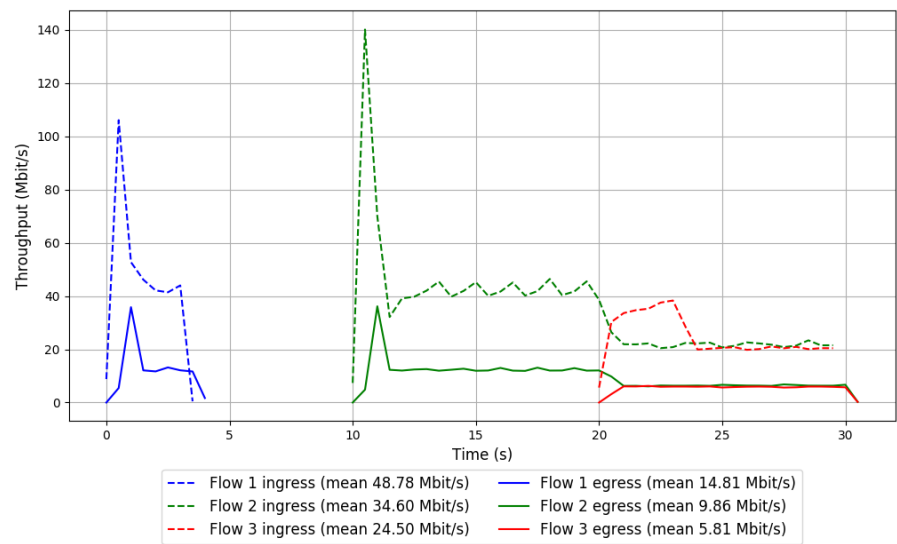Run 5: Report of TCP BBR — Data Link

```
Run 1: Statistics of Copa

Start at: 2019-01-03 00:15:40
End at: 2019-01-03 00:16:10
Local clock offset: 0.344 ms
Remote clock offset: -3.716 ms


# Below is generated by plot.py at 2019-01-03 02:02:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.50 Mbit/s
95th percentile per-packet one-way delay: 31.621 ms
Loss rate: 76.08%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 30.664 ms
Loss rate: 98.33%
-- Flow 2:
Average throughput: 10.93 Mbit/s
95th percentile per-packet one-way delay: 31.733 ms
Loss rate: 74.72%
-- Flow 3:
Average throughput: 3.67 Mbit/s
95th percentile per-packet one-way delay: 30.793 ms
Loss rate: 81.91%
```
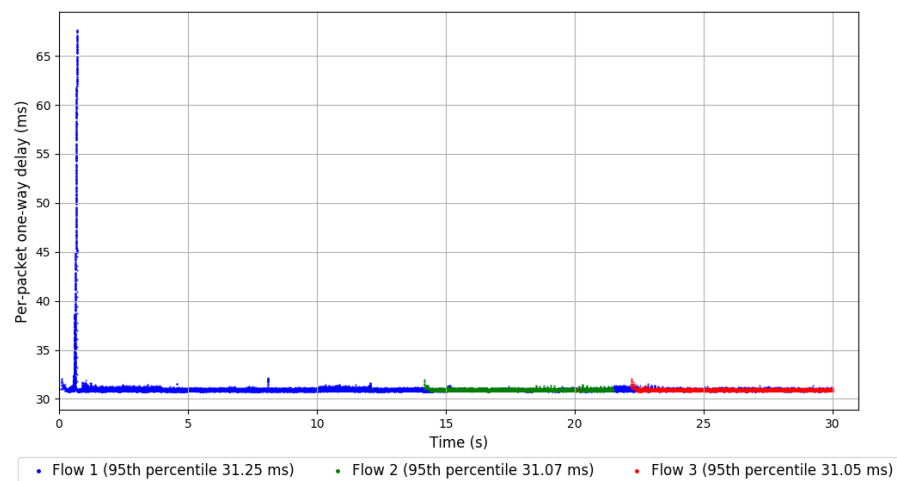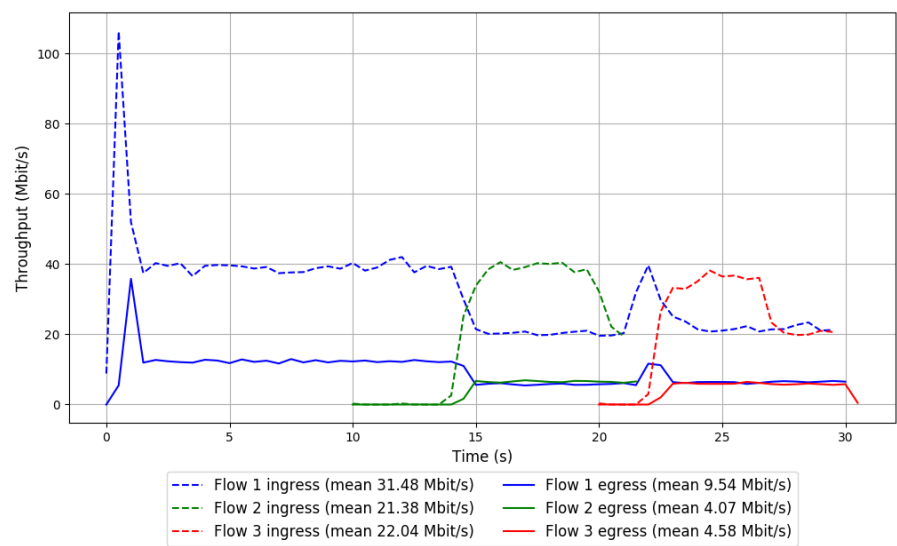
Run 1: Report of Copa — Data Link

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```
Run 2: Statistics of Copa

Start at: 2019-01-03 00:38:54
End at: 2019-01-03 00:39:24
Local clock offset: 0.145 ms
Remote clock offset: -3.201 ms


# Below is generated by plot.py at 2019-01-03 02:02:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.23 Mbit/s
95th percentile per-packet one-way delay: 34.806 ms
Loss rate: 72.27%
-- Flow 1:
Average throughput: 14.81 Mbit/s
95th percentile per-packet one-way delay: 54.127 ms
Loss rate: 69.66%
-- Flow 2:
Average throughput: 9.86 Mbit/s
95th percentile per-packet one-way delay: 32.005 ms
Loss rate: 71.51%
-- Flow 3:
Average throughput: 5.81 Mbit/s
95th percentile per-packet one-way delay: 30.996 ms
Loss rate: 76.27%
```
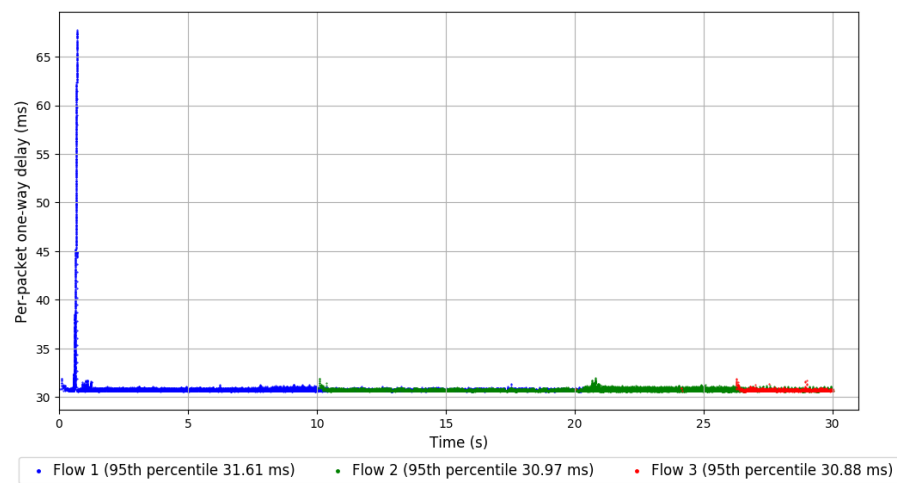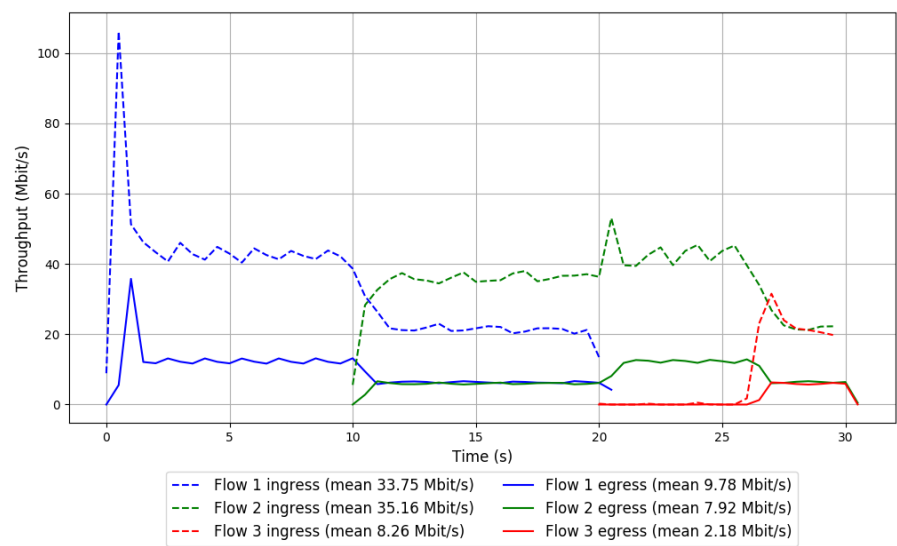
Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2019-01-03 01:01:41
End at: 2019-01-03 01:02:11
Local clock offset: 0.217 ms
Remote clock offset: -2.908 ms


# Below is generated by plot.py at 2019-01-03 02:02:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.186 ms
Loss rate: 73.13%
-- Flow 1:
Average throughput: 9.54 Mbit/s
95th percentile per-packet one-way delay: 31.245 ms
Loss rate: 69.69%
-- Flow 2:
Average throughput: 4.07 Mbit/s
95th percentile per-packet one-way delay: 31.068 ms
Loss rate: 80.97%
-- Flow 3:
Average throughput: 4.58 Mbit/s
95th percentile per-packet one-way delay: 31.051 ms
Loss rate: 79.20%
```
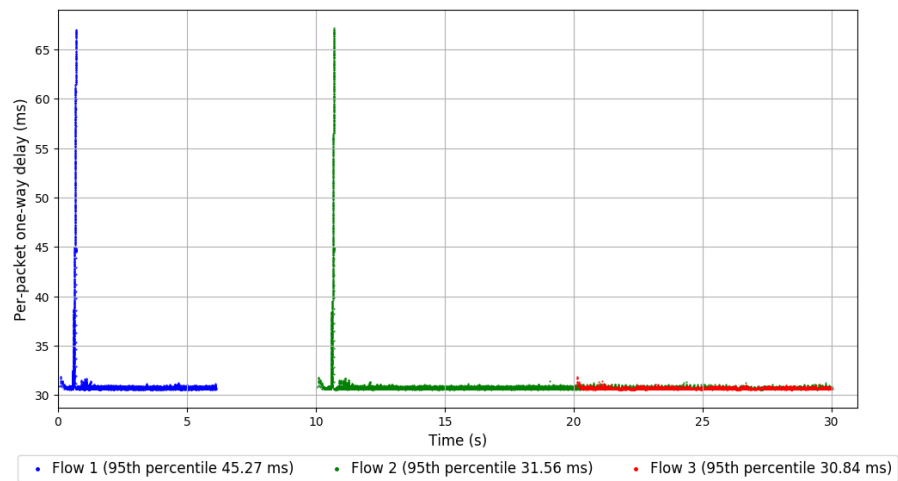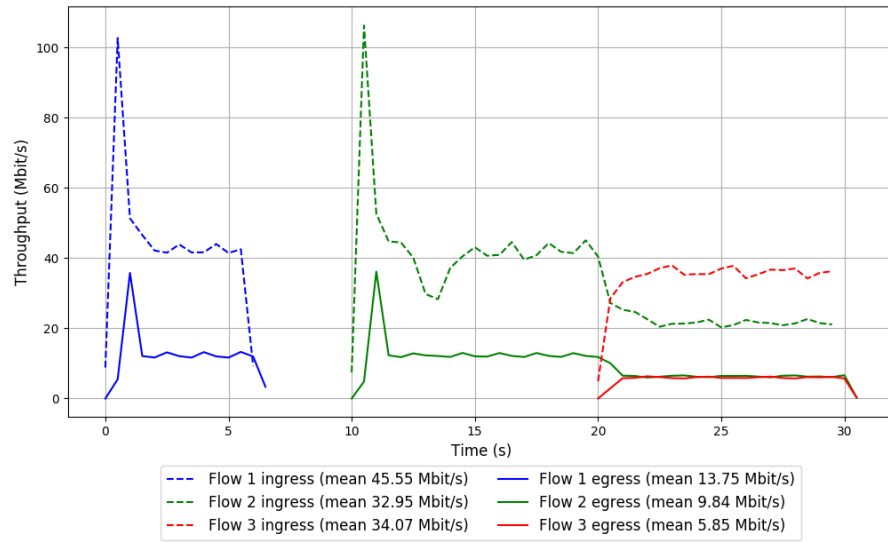
Run 3: Report of Copa — Data Link

Flow 1 ingress (mean 31.48 Mbit/s) --- Flow 1 egress (mean 9.54 Mbit/s)
Flow 2 ingress (mean 21.38 Mbit/s) --- Flow 2 egress (mean 4.07 Mbit/s)
Flow 3 ingress (mean 22.04 Mbit/s) --- Flow 3 egress (mean 4.58 Mbit/s)

Flow 1 (95th percentile 31.25 ms)   Flow 2 (95th percentile 31.07 ms)   Flow 3 (95th percentile 31.05 ms)

```
Run 4: Statistics of Copa

Start at: 2019-01-03 01:24:39
End at: 2019-01-03 01:25:09
Local clock offset: 0.372 ms
Remote clock offset: -2.826 ms


# Below is generated by plot.py at 2019-01-03 02:02:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 31.015 ms
Loss rate: 74.26%
-- Flow 1:
Average throughput: 9.78 Mbit/s
95th percentile per-packet one-way delay: 31.614 ms
Loss rate: 71.03%
-- Flow 2:
Average throughput: 7.92 Mbit/s
95th percentile per-packet one-way delay: 30.971 ms
Loss rate: 77.48%
-- Flow 3:
Average throughput: 2.18 Mbit/s
95th percentile per-packet one-way delay: 30.880 ms
Loss rate: 73.68%
```
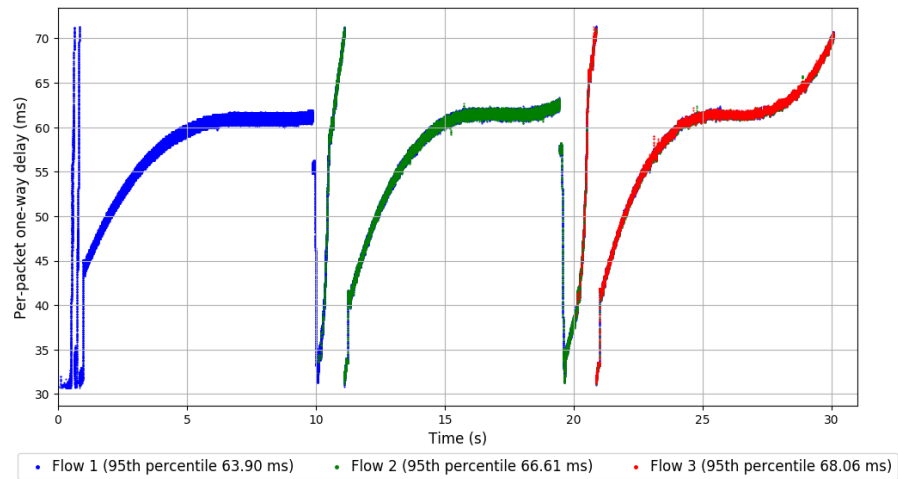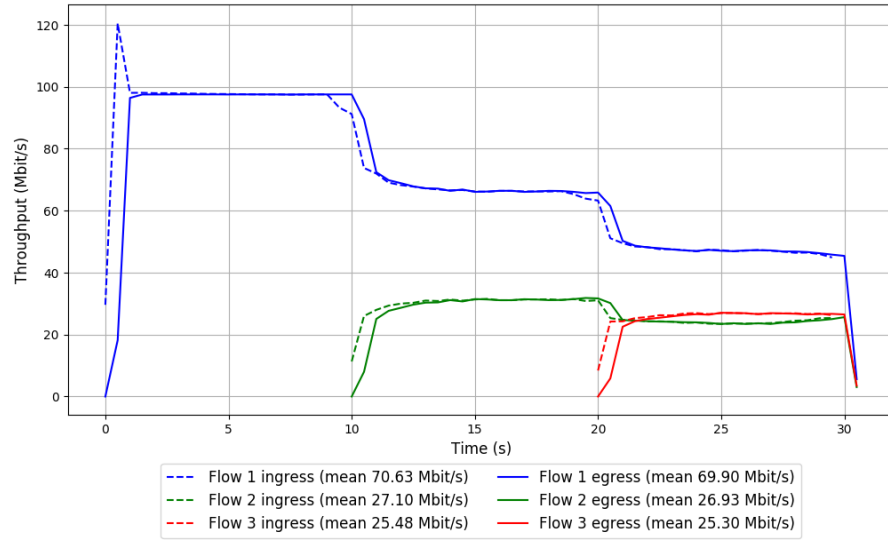
Run 4: Report of Copa — Data Link

```
Run 5: Statistics of Copa

Start at: 2019-01-03 01:47:58
End at: 2019-01-03 01:48:28
Local clock offset: 0.216 ms
Remote clock offset: -2.704 ms


# Below is generated by plot.py at 2019-01-03 02:02:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 11.29 Mbit/s
95th percentile per-packet one-way delay: 33.379 ms
Loss rate: 73.48%
-- Flow 1:
Average throughput: 13.75 Mbit/s
95th percentile per-packet one-way delay: 45.273 ms
Loss rate: 69.97%
-- Flow 2:
Average throughput: 9.84 Mbit/s
95th percentile per-packet one-way delay: 31.556 ms
Loss rate: 70.14%
-- Flow 3:
Average throughput: 5.85 Mbit/s
95th percentile per-packet one-way delay: 30.835 ms
Loss rate: 82.82%
```
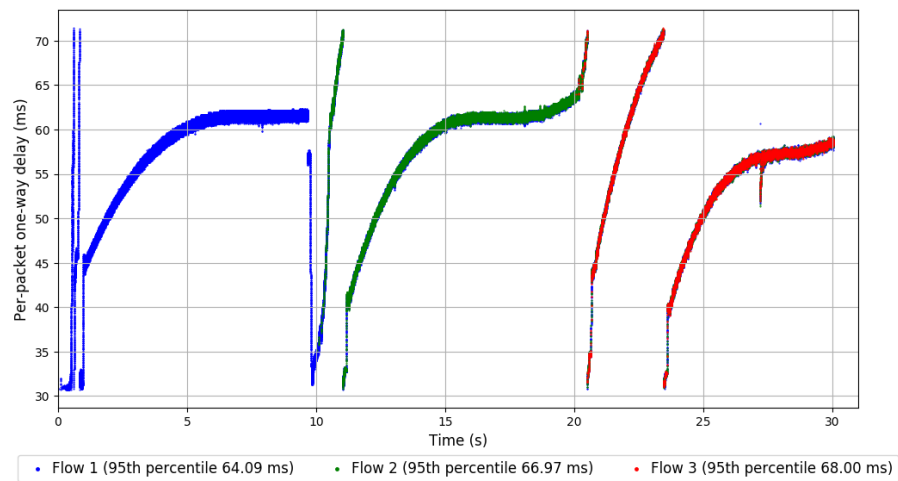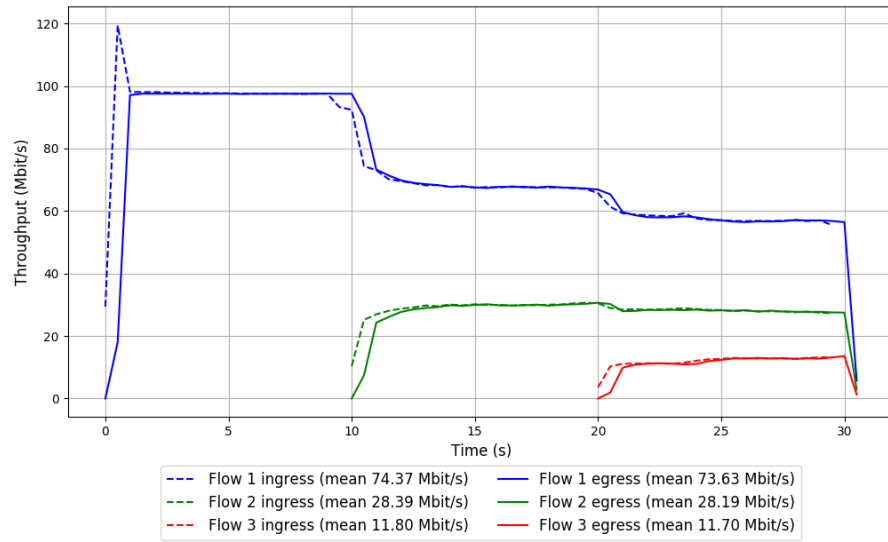
Run 5: Report of Copa — Data Link

```
Run 1: Statistics of TCP Cubic

Start at: 2019-01-03 00:16:49
End at: 2019-01-03 00:17:19
Local clock offset: 0.331 ms
Remote clock offset: -3.571 ms


# Below is generated by plot.py at 2019-01-03 02:02:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 96.29 Mbit/s
95th percentile per-packet one-way delay: 65.581 ms
Loss rate: 0.76%
-- Flow 1:
Average throughput: 69.90 Mbit/s
95th percentile per-packet one-way delay: 63.898 ms
Loss rate: 0.89%
-- Flow 2:
Average throughput: 26.93 Mbit/s
95th percentile per-packet one-way delay: 66.610 ms
Loss rate: 0.43%
-- Flow 3:
Average throughput: 25.30 Mbit/s
95th percentile per-packet one-way delay: 68.061 ms
Loss rate: 0.39%
```
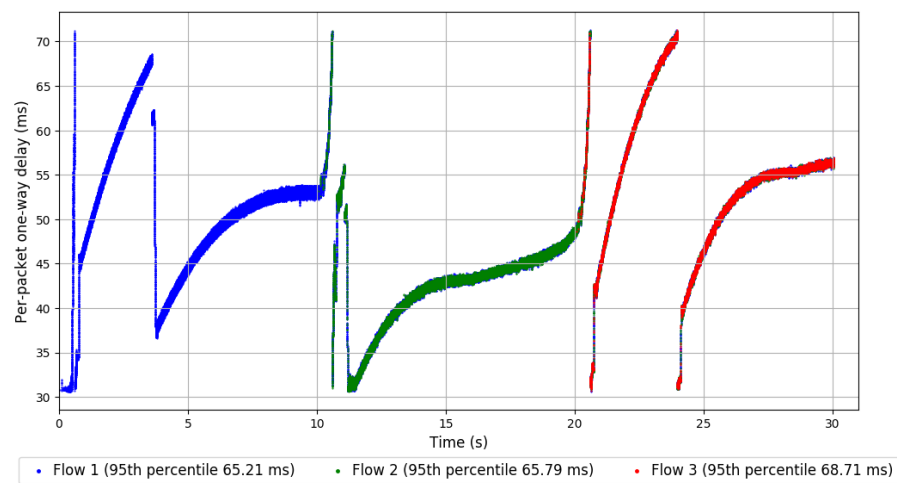
Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2019-01-03 00:40:04
End at: 2019-01-03 00:40:34
Local clock offset: 0.14 ms
Remote clock offset: -3.231 ms


# Below is generated by plot.py at 2019-01-03 02:02:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 96.29 Mbit/s
95th percentile per-packet one-way delay: 65.104 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 73.63 Mbit/s
95th percentile per-packet one-way delay: 64.095 ms
Loss rate: 0.91%
-- Flow 2:
Average throughput: 28.19 Mbit/s
95th percentile per-packet one-way delay: 66.974 ms
Loss rate: 0.61%
-- Flow 3:
Average throughput: 11.70 Mbit/s
95th percentile per-packet one-way delay: 68.001 ms
Loss rate: 0.88%
```
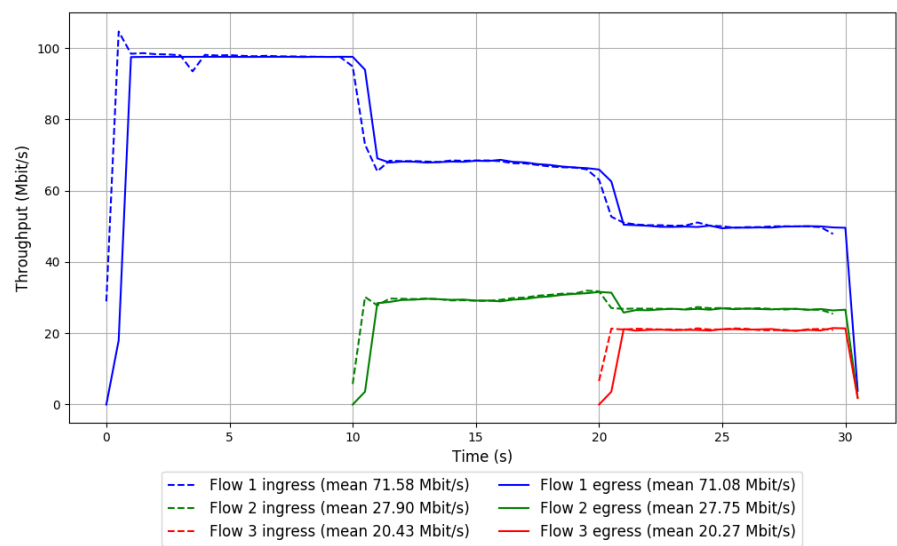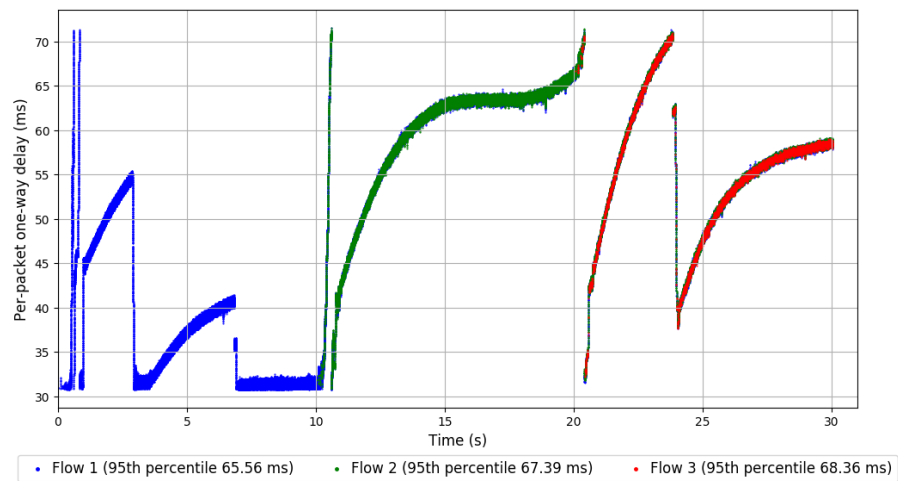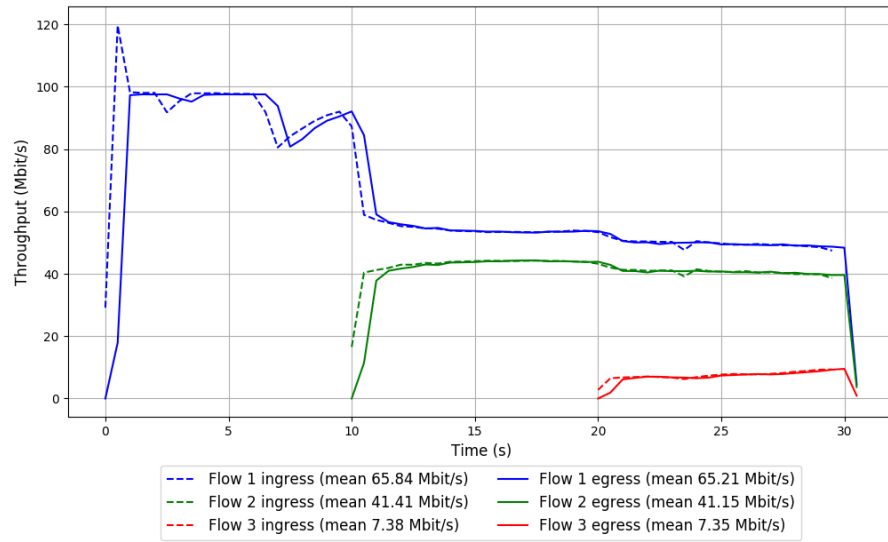
Run 2: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 74.37 Mbit/s) --- Flow 1 egress (mean 73.63 Mbit/s)
Flow 2 ingress (mean 28.39 Mbit/s) --- Flow 2 egress (mean 28.19 Mbit/s)
Flow 3 ingress (mean 11.80 Mbit/s) --- Flow 3 egress (mean 11.70 Mbit/s)

Flow 1 (95th percentile 64.09 ms)   Flow 2 (95th percentile 66.97 ms)   Flow 3 (95th percentile 68.00 ms)

```
Run 3: Statistics of TCP Cubic

Start at: 2019-01-03 01:02:51
End at: 2019-01-03 01:03:21
Local clock offset: 0.225 ms
Remote clock offset: -3.093 ms


# Below is generated by plot.py at 2019-01-03 02:02:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 96.29 Mbit/s
95th percentile per-packet one-way delay: 65.669 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 71.08 Mbit/s
95th percentile per-packet one-way delay: 65.208 ms
Loss rate: 0.62%
-- Flow 2:
Average throughput: 27.75 Mbit/s
95th percentile per-packet one-way delay: 65.793 ms
Loss rate: 0.52%
-- Flow 3:
Average throughput: 20.27 Mbit/s
95th percentile per-packet one-way delay: 68.710 ms
Loss rate: 0.72%
```
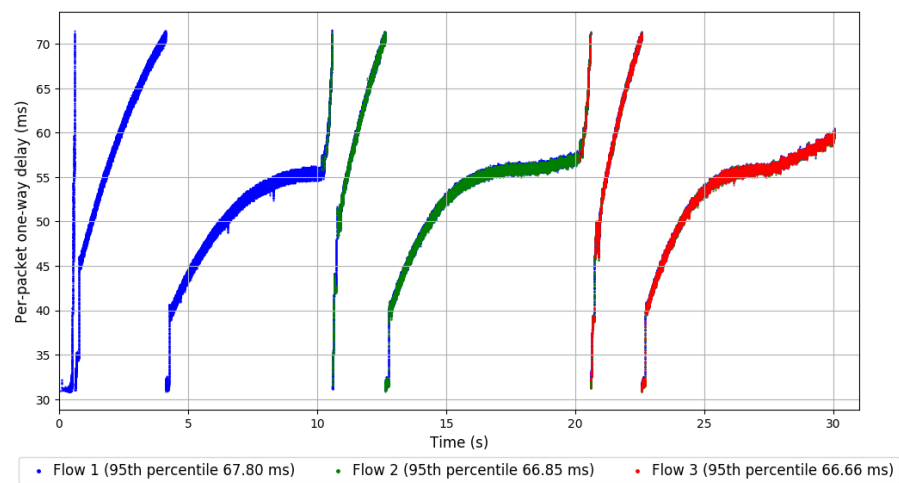
Run 3: Report of TCP Cubic — Data Link

```
Run 4: Statistics of TCP Cubic

Start at: 2019-01-03 01:25:49
End at: 2019-01-03 01:26:19
Local clock offset: 0.34 ms
Remote clock offset: -2.702 ms


# Below is generated by plot.py at 2019-01-03 02:03:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.09 Mbit/s
95th percentile per-packet one-way delay: 66.186 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 65.21 Mbit/s
95th percentile per-packet one-way delay: 65.565 ms
Loss rate: 0.87%
-- Flow 2:
Average throughput: 41.15 Mbit/s
95th percentile per-packet one-way delay: 67.390 ms
Loss rate: 0.49%
-- Flow 3:
Average throughput: 7.35 Mbit/s
95th percentile per-packet one-way delay: 68.365 ms
Loss rate: 0.49%
```

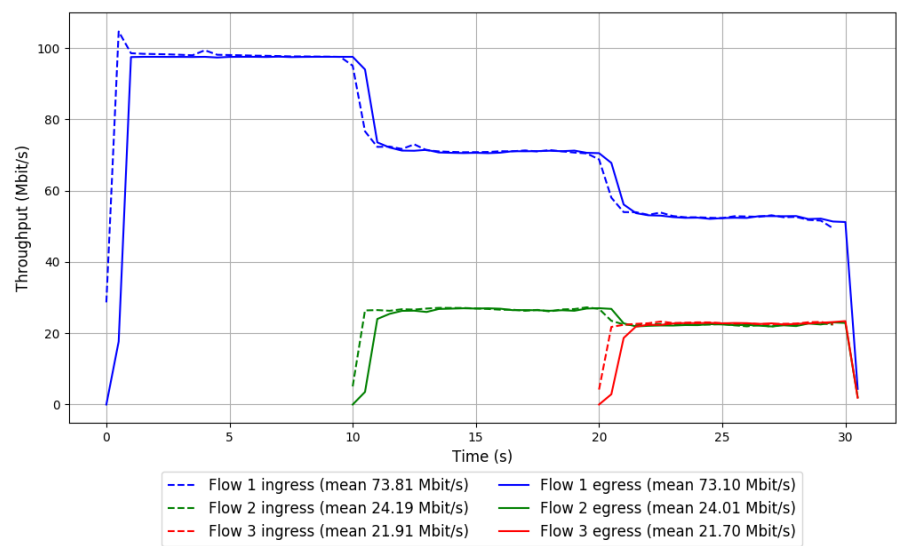Run 4: Report of TCP Cubic — Data Link

```
Run 5: Statistics of TCP Cubic

Start at: 2019-01-03 01:49:07
End at: 2019-01-03 01:49:37
Local clock offset: 0.253 ms
Remote clock offset: -2.553 ms


# Below is generated by plot.py at 2019-01-03 02:03:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 96.29 Mbit/s
95th percentile per-packet one-way delay: 67.583 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 73.10 Mbit/s
95th percentile per-packet one-way delay: 67.803 ms
Loss rate: 0.86%
-- Flow 2:
Average throughput: 24.01 Mbit/s
95th percentile per-packet one-way delay: 66.853 ms
Loss rate: 0.76%
-- Flow 3:
Average throughput: 21.70 Mbit/s
95th percentile per-packet one-way delay: 66.662 ms
Loss rate: 0.95%
```

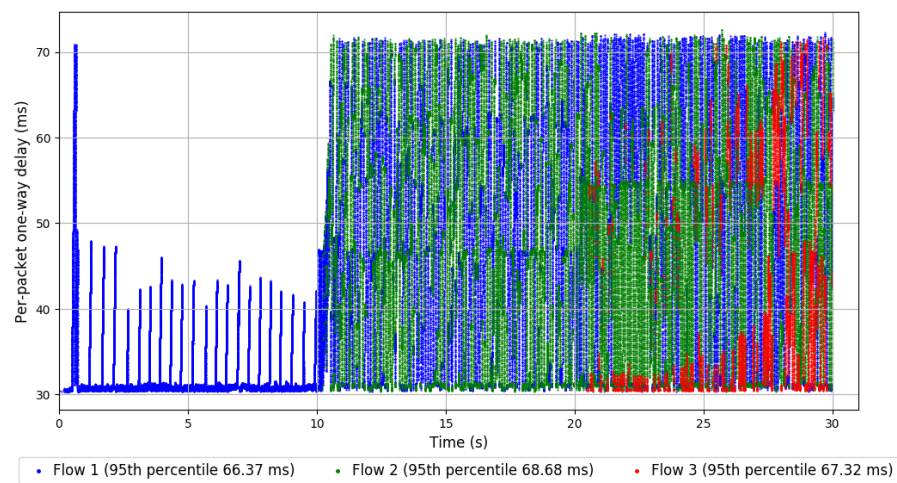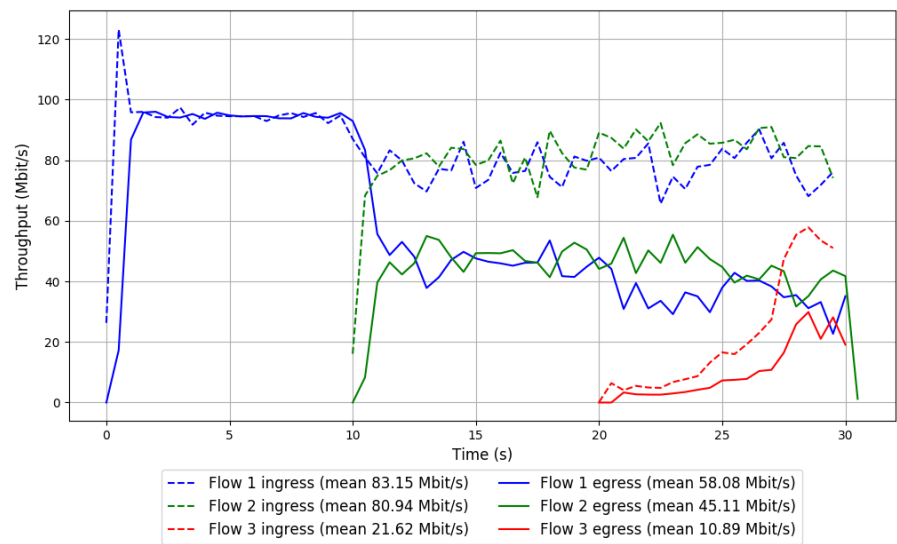Run 5: Report of TCP Cubic — Data Link

```
Run 1: Statistics of FillP

Start at: 2019-01-03 00:09:17
End at: 2019-01-03 00:09:47
Local clock offset: 0.315 ms
Remote clock offset: -3.845 ms

# Below is generated by plot.py at 2019-01-03 02:03:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.63 Mbit/s
95th percentile per-packet one-way delay: 67.483 ms
Loss rate: 36.42%
-- Flow 1:
Average throughput: 58.08 Mbit/s
95th percentile per-packet one-way delay: 66.368 ms
Loss rate: 30.14%
-- Flow 2:
Average throughput: 45.11 Mbit/s
95th percentile per-packet one-way delay: 68.680 ms
Loss rate: 44.18%
-- Flow 3:
Average throughput: 10.89 Mbit/s
95th percentile per-packet one-way delay: 67.324 ms
Loss rate: 50.88%
```

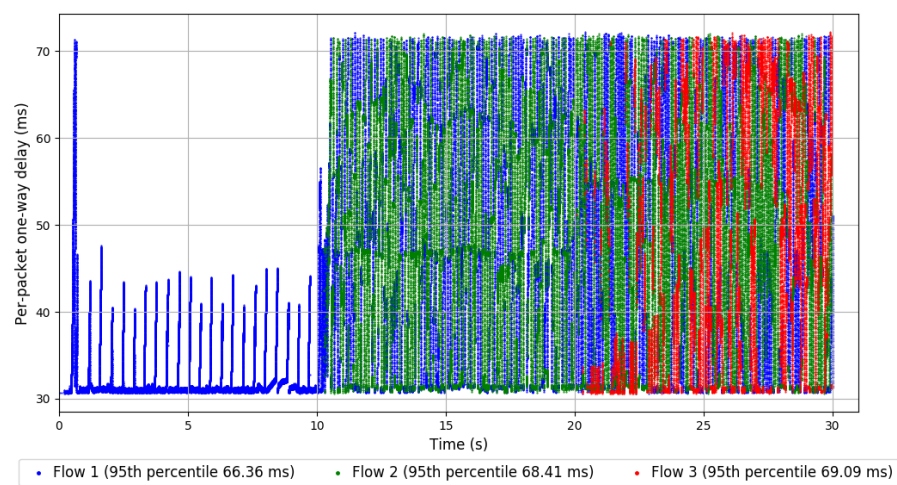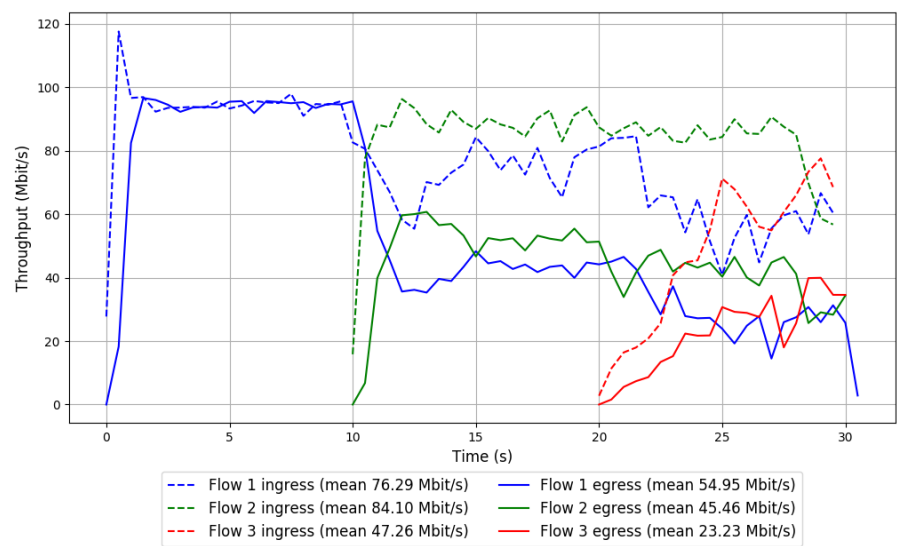Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2019-01-03 00:32:35
End at: 2019-01-03 00:33:05
Local clock offset: 0.183 ms
Remote clock offset: -3.297 ms

# Below is generated by plot.py at 2019-01-03 02:03:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.85 Mbit/s
95th percentile per-packet one-way delay: 67.674 ms
Loss rate: 37.19%
-- Flow 1:
Average throughput: 54.95 Mbit/s
95th percentile per-packet one-way delay: 66.365 ms
Loss rate: 27.93%
-- Flow 2:
Average throughput: 45.46 Mbit/s
95th percentile per-packet one-way delay: 68.410 ms
Loss rate: 45.97%
-- Flow 3:
Average throughput: 23.23 Mbit/s
95th percentile per-packet one-way delay: 69.088 ms
Loss rate: 50.94%
```

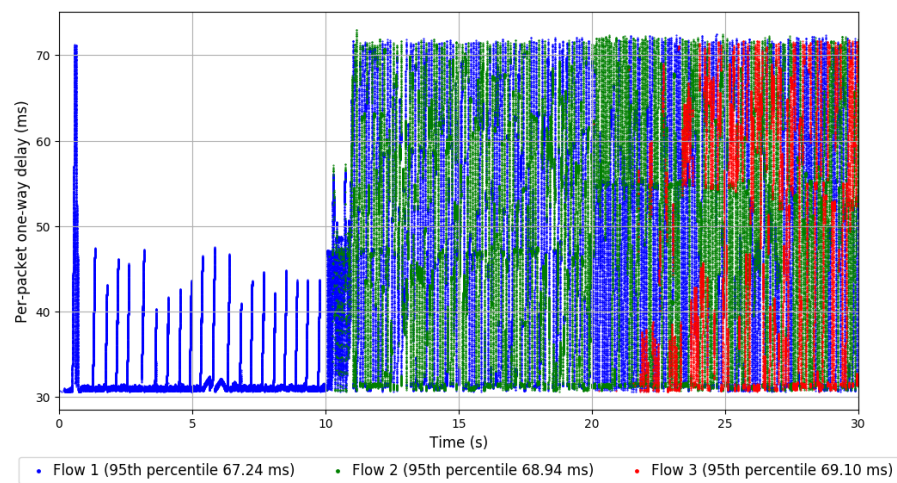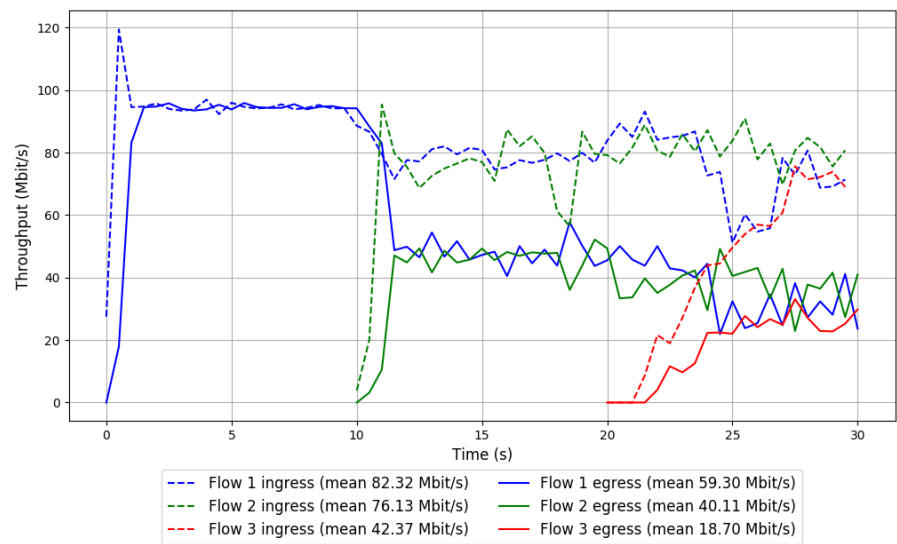Run 2: Report of FillP — Data Link

```
Run 3: Statistics of FillP

Start at: 2019-01-03 00:55:36
End at: 2019-01-03 00:56:06
Local clock offset: 0.175 ms
Remote clock offset: -2.939 ms


# Below is generated by plot.py at 2019-01-03 02:03:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.10 Mbit/s
95th percentile per-packet one-way delay: 68.175 ms
Loss rate: 37.34%
-- Flow 1:
Average throughput: 59.30 Mbit/s
95th percentile per-packet one-way delay: 67.241 ms
Loss rate: 28.00%
-- Flow 2:
Average throughput: 40.11 Mbit/s
95th percentile per-packet one-way delay: 68.939 ms
Loss rate: 47.32%
-- Flow 3:
Average throughput: 18.70 Mbit/s
95th percentile per-packet one-way delay: 69.100 ms
Loss rate: 56.14%
```

Run 3: Report of FillP — Data Link

```
Run 4: Statistics of FillP

Start at: 2019-01-03 01:18:34
End at: 2019-01-03 01:19:04
Local clock offset: 0.346 ms
Remote clock offset: -2.94 ms


# Below is generated by plot.py at 2019-01-03 02:03:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.86 Mbit/s
95th percentile per-packet one-way delay: 67.612 ms
Loss rate: 38.12%
-- Flow 1:
Average throughput: 58.77 Mbit/s
95th percentile per-packet one-way delay: 65.667 ms
Loss rate: 29.56%
-- Flow 2:
Average throughput: 41.69 Mbit/s
95th percentile per-packet one-way delay: 69.122 ms
Loss rate: 46.51%
-- Flow 3:
Average throughput: 19.36 Mbit/s
95th percentile per-packet one-way delay: 68.889 ms
Loss rate: 56.83%
```
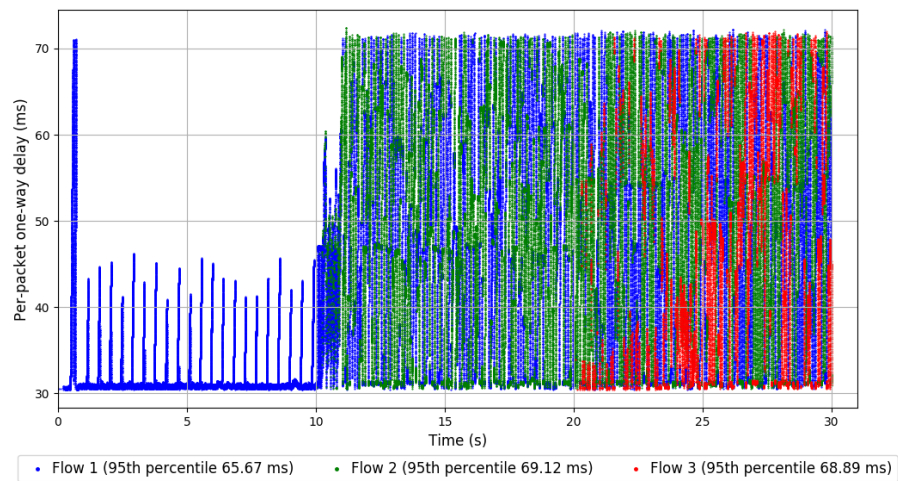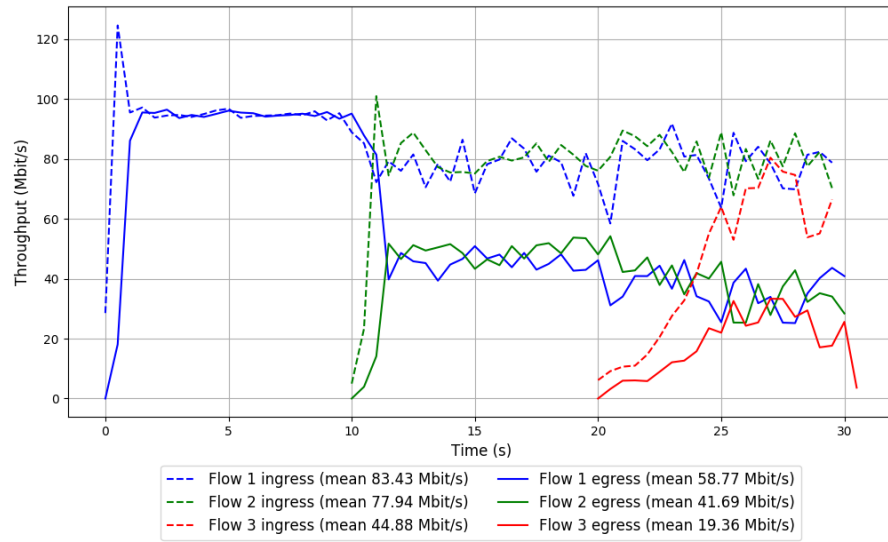
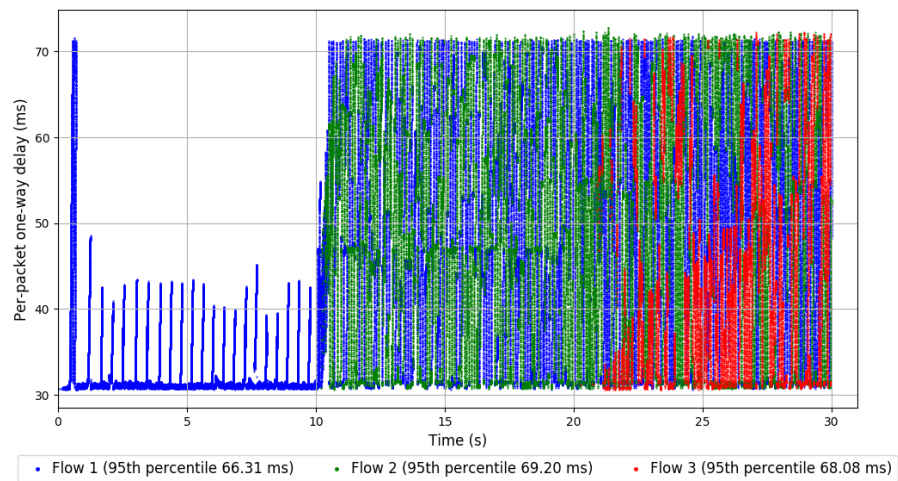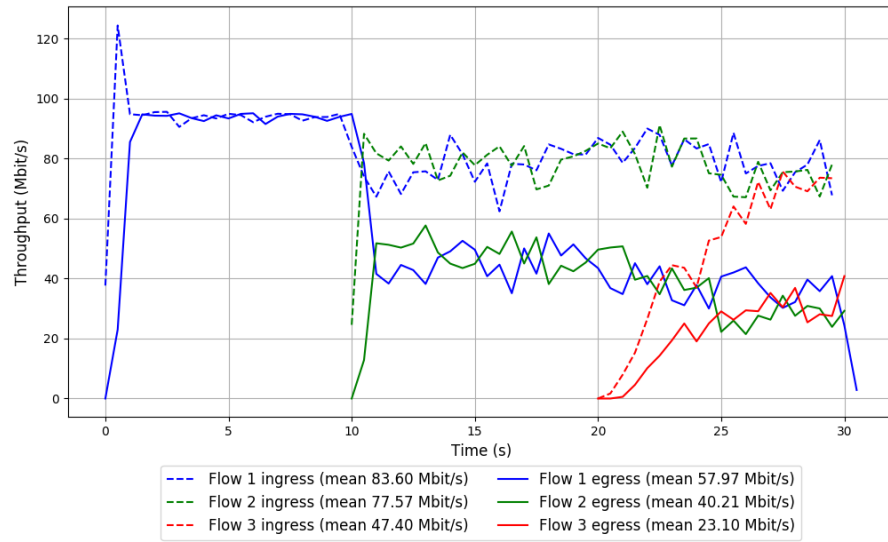Run 4: Report of FillP — Data Link

```
Run 5: Statistics of FillP

Start at: 2019-01-03 01:41:44
End at: 2019-01-03 01:42:14
Local clock offset: 0.193 ms
Remote clock offset: -2.589 ms


# Below is generated by plot.py at 2019-01-03 02:04:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.33 Mbit/s
95th percentile per-packet one-way delay: 68.002 ms
Loss rate: 38.80%
-- Flow 1:
Average throughput: 57.97 Mbit/s
95th percentile per-packet one-way delay: 66.311 ms
Loss rate: 30.58%
-- Flow 2:
Average throughput: 40.21 Mbit/s
95th percentile per-packet one-way delay: 69.197 ms
Loss rate: 48.20%
-- Flow 3:
Average throughput: 23.10 Mbit/s
95th percentile per-packet one-way delay: 68.080 ms
Loss rate: 51.57%
```
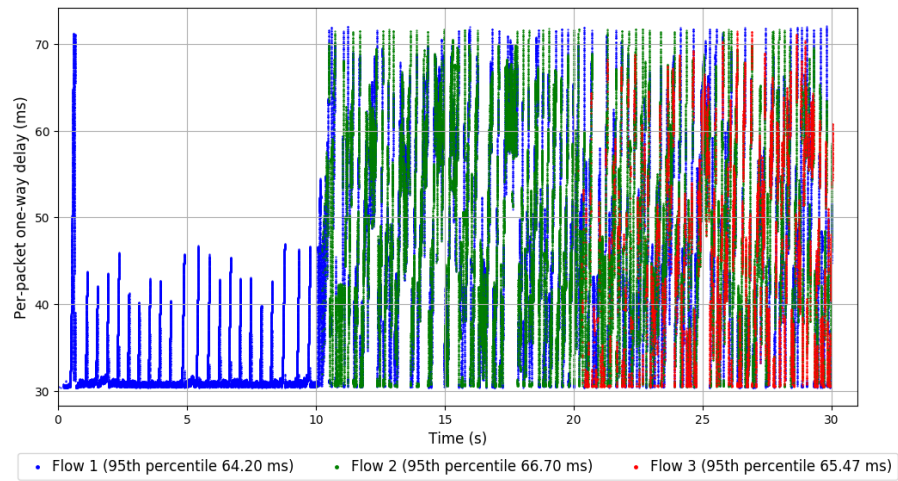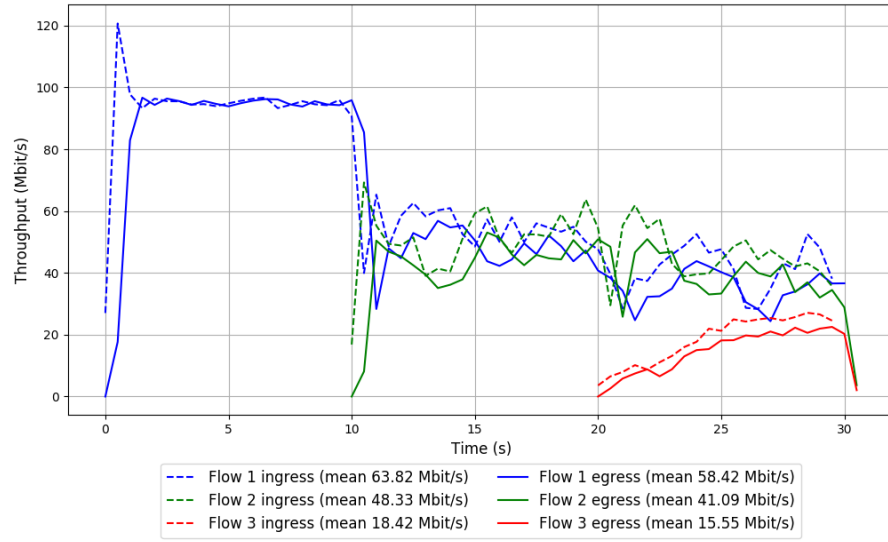
Run 5: Report of FillP — Data Link

```
Run 1: Statistics of FillP-Sheep

Start at: 2019-01-03 00:06:45
End at: 2019-01-03 00:07:15
Local clock offset: 0.323 ms
Remote clock offset: -3.802 ms


# Below is generated by plot.py at 2019-01-03 02:04:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.88 Mbit/s
95th percentile per-packet one-way delay: 65.353 ms
Loss rate: 10.87%
-- Flow 1:
Average throughput: 58.42 Mbit/s
95th percentile per-packet one-way delay: 64.200 ms
Loss rate: 8.40%
-- Flow 2:
Average throughput: 41.09 Mbit/s
95th percentile per-packet one-way delay: 66.702 ms
Loss rate: 14.89%
-- Flow 3:
Average throughput: 15.55 Mbit/s
95th percentile per-packet one-way delay: 65.468 ms
Loss rate: 15.50%
```

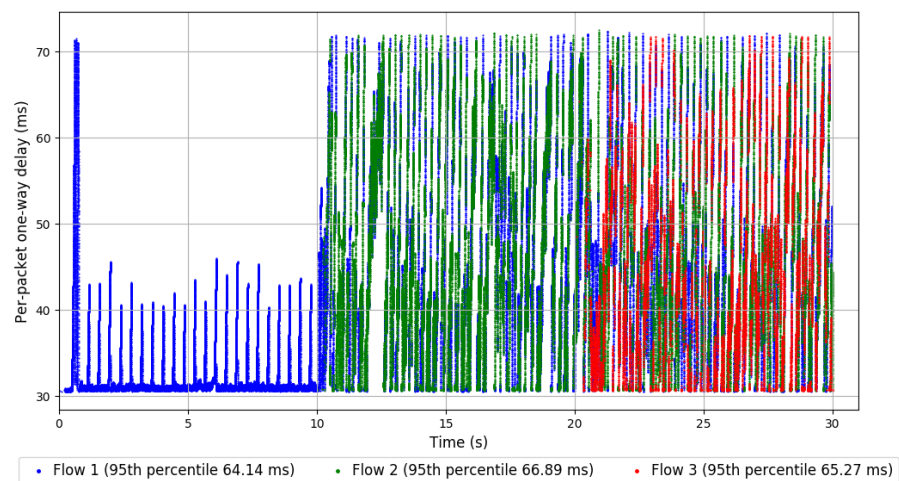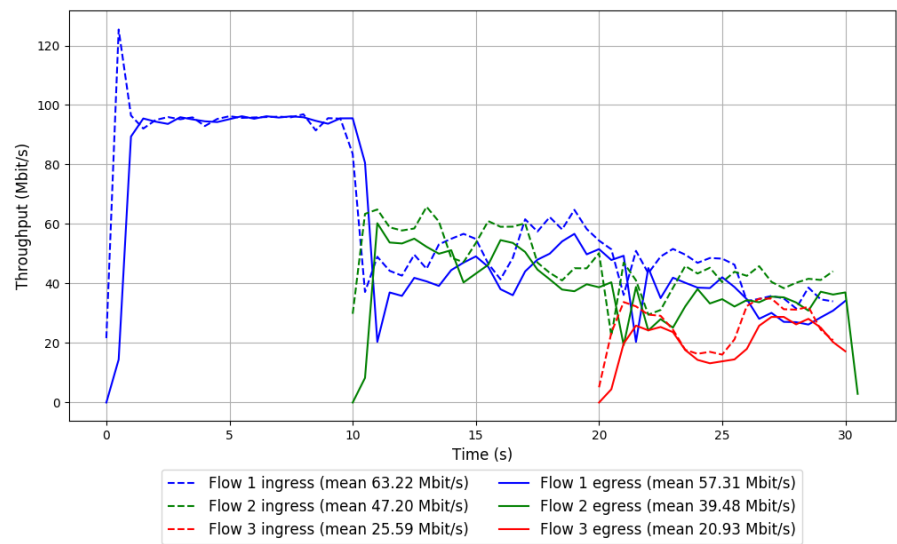Run 1: Report of FillP-Sheep — Data Link

```
Run 2: Statistics of FillP-Sheep

Start at: 2019-01-03 00:30:07
End at: 2019-01-03 00:30:37
Local clock offset: 0.251 ms
Remote clock offset: -3.384 ms


# Below is generated by plot.py at 2019-01-03 02:04:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.47 Mbit/s
95th percentile per-packet one-way delay: 65.364 ms
Loss rate: 12.21%
-- Flow 1:
Average throughput: 57.31 Mbit/s
95th percentile per-packet one-way delay: 64.144 ms
Loss rate: 9.35%
-- Flow 2:
Average throughput: 39.48 Mbit/s
95th percentile per-packet one-way delay: 66.895 ms
Loss rate: 16.30%
-- Flow 3:
Average throughput: 20.93 Mbit/s
95th percentile per-packet one-way delay: 65.267 ms
Loss rate: 18.34%
```

Run 2: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 63.22 Mbit/s) --- Flow 1 egress (mean 57.31 Mbit/s)
Flow 2 ingress (mean 47.20 Mbit/s) --- Flow 2 egress (mean 39.48 Mbit/s)
Flow 3 ingress (mean 25.59 Mbit/s) --- Flow 3 egress (mean 20.93 Mbit/s)

Flow 1 (95th percentile 64.14 ms)   Flow 2 (95th percentile 66.89 ms)   Flow 3 (95th percentile 65.27 ms)
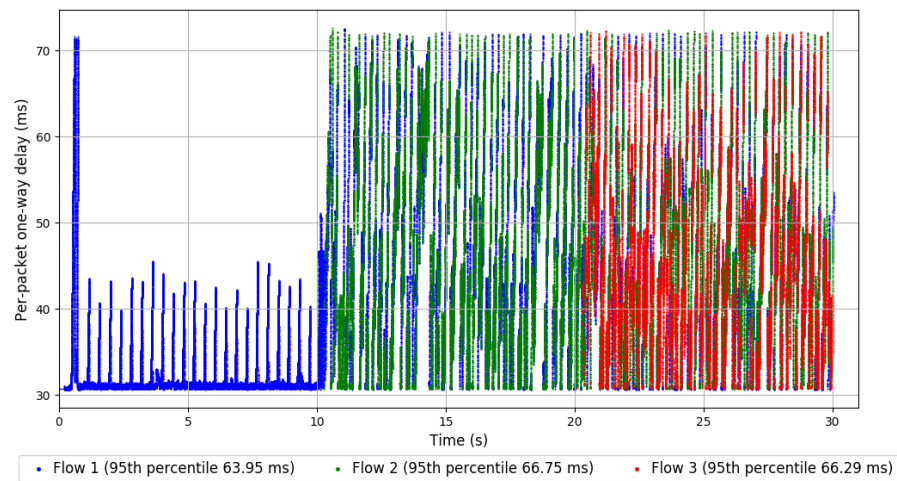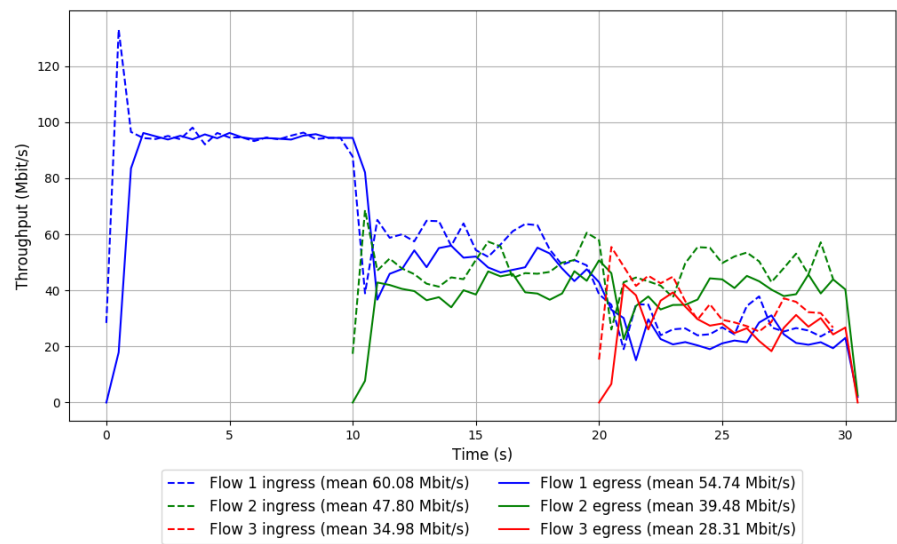
```
Run 3: Statistics of FillP-Sheep

Start at: 2019-01-03 00:53:12
End at: 2019-01-03 00:53:42
Local clock offset: 0.174 ms
Remote clock offset: -3.039 ms


# Below is generated by plot.py at 2019-01-03 02:04:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.47 Mbit/s
95th percentile per-packet one-way delay: 65.267 ms
Loss rate: 12.58%
-- Flow 1:
Average throughput: 54.74 Mbit/s
95th percentile per-packet one-way delay: 63.945 ms
Loss rate: 8.82%
-- Flow 2:
Average throughput: 39.48 Mbit/s
95th percentile per-packet one-way delay: 66.745 ms
Loss rate: 17.36%
-- Flow 3:
Average throughput: 28.31 Mbit/s
95th percentile per-packet one-way delay: 66.290 ms
Loss rate: 18.91%
```

Run 3: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 60.08 Mbit/s) --- Flow 1 egress (mean 54.74 Mbit/s)
Flow 2 ingress (mean 47.80 Mbit/s) --- Flow 2 egress (mean 39.48 Mbit/s)
Flow 3 ingress (mean 34.98 Mbit/s) --- Flow 3 egress (mean 28.31 Mbit/s)

Flow 1 (95th percentile 63.95 ms)   Flow 2 (95th percentile 66.75 ms)   Flow 3 (95th percentile 66.29 ms)
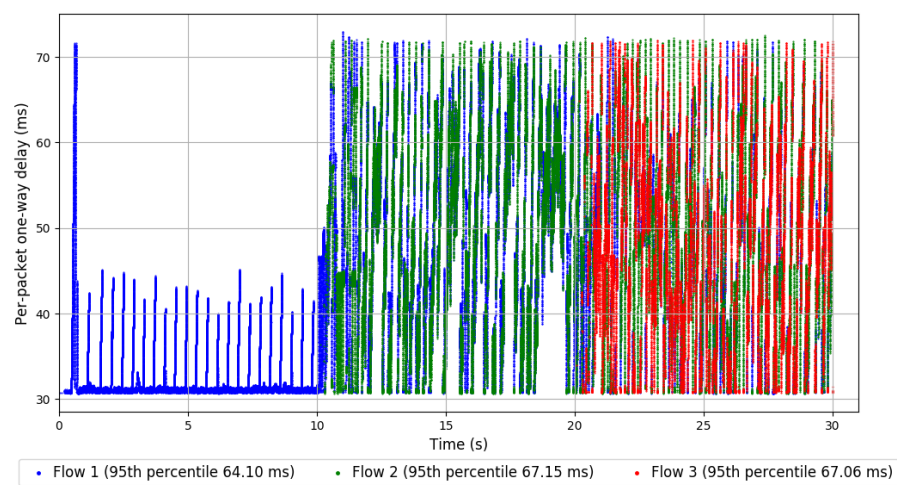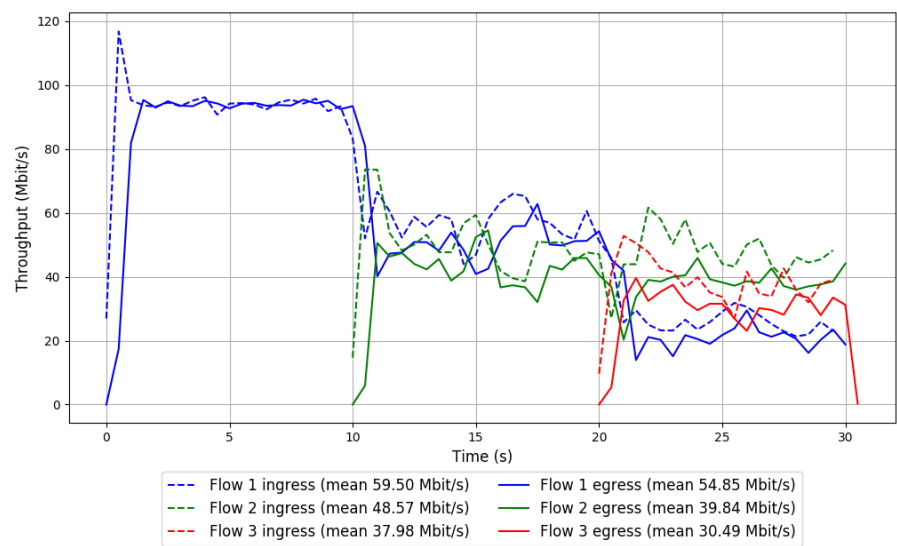
```
Run 4: Statistics of FillP-Sheep

Start at: 2019-01-03 01:16:09
End at: 2019-01-03 01:16:39
Local clock offset: 0.311 ms
Remote clock offset: -2.793 ms


# Below is generated by plot.py at 2019-01-03 02:05:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.40 Mbit/s
95th percentile per-packet one-way delay: 65.780 ms
Loss rate: 12.45%
-- Flow 1:
Average throughput: 54.85 Mbit/s
95th percentile per-packet one-way delay: 64.096 ms
Loss rate: 7.87%
-- Flow 2:
Average throughput: 39.84 Mbit/s
95th percentile per-packet one-way delay: 67.151 ms
Loss rate: 18.02%
-- Flow 3:
Average throughput: 30.49 Mbit/s
95th percentile per-packet one-way delay: 67.064 ms
Loss rate: 19.76%
```

Run 4: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 59.50 Mbit/s) --- Flow 1 egress (mean 54.85 Mbit/s) ---
Flow 2 ingress (mean 48.57 Mbit/s) --- Flow 2 egress (mean 39.84 Mbit/s) ---
Flow 3 ingress (mean 37.98 Mbit/s) --- Flow 3 egress (mean 30.49 Mbit/s) ---

Flow 1 (95th percentile 64.10 ms) · Flow 2 (95th percentile 67.15 ms) · Flow 3 (95th percentile 67.06 ms)
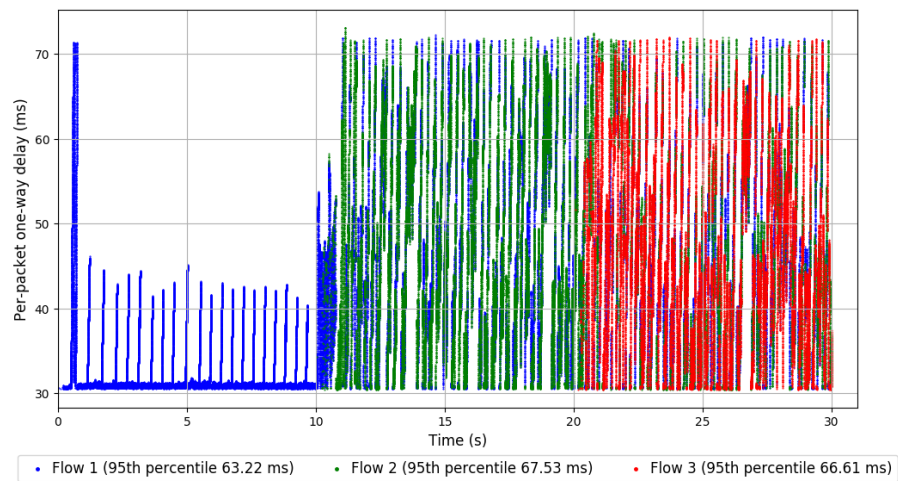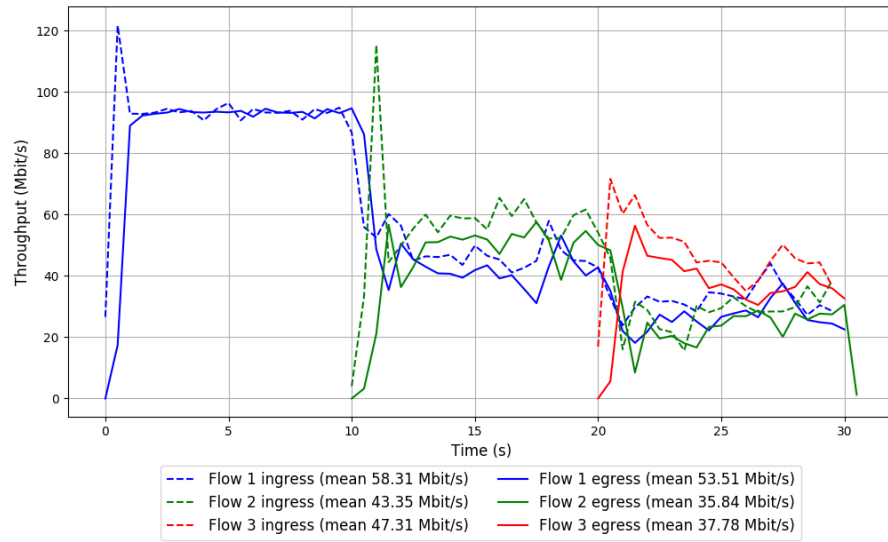
```
Run 5: Statistics of FillP-Sheep

Start at: 2019-01-03 01:39:13
End at: 2019-01-03 01:39:43
Local clock offset: 0.211 ms
Remote clock offset: -2.748 ms


# Below is generated by plot.py at 2019-01-03 02:05:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.84 Mbit/s
95th percentile per-packet one-way delay: 65.703 ms
Loss rate: 12.63%
-- Flow 1:
Average throughput: 53.51 Mbit/s
95th percentile per-packet one-way delay: 63.220 ms
Loss rate: 8.24%
-- Flow 2:
Average throughput: 35.84 Mbit/s
95th percentile per-packet one-way delay: 67.533 ms
Loss rate: 17.32%
-- Flow 3:
Average throughput: 37.78 Mbit/s
95th percentile per-packet one-way delay: 66.613 ms
Loss rate: 20.31%
```

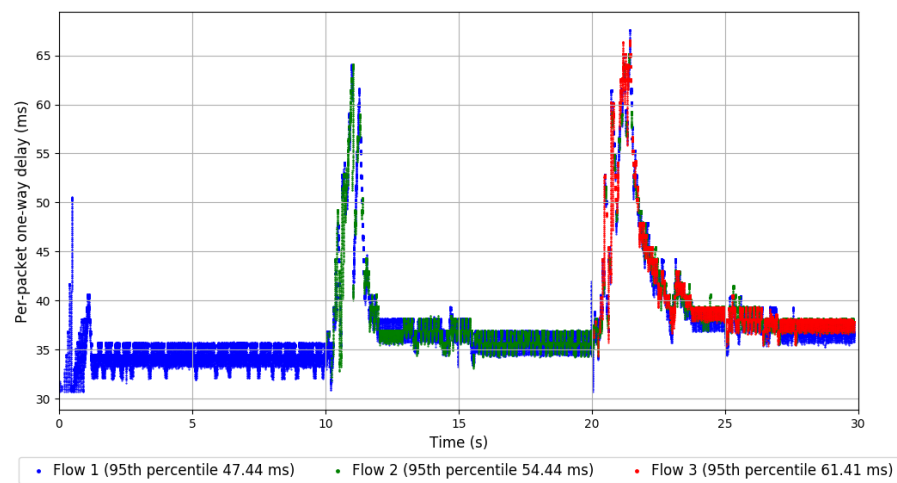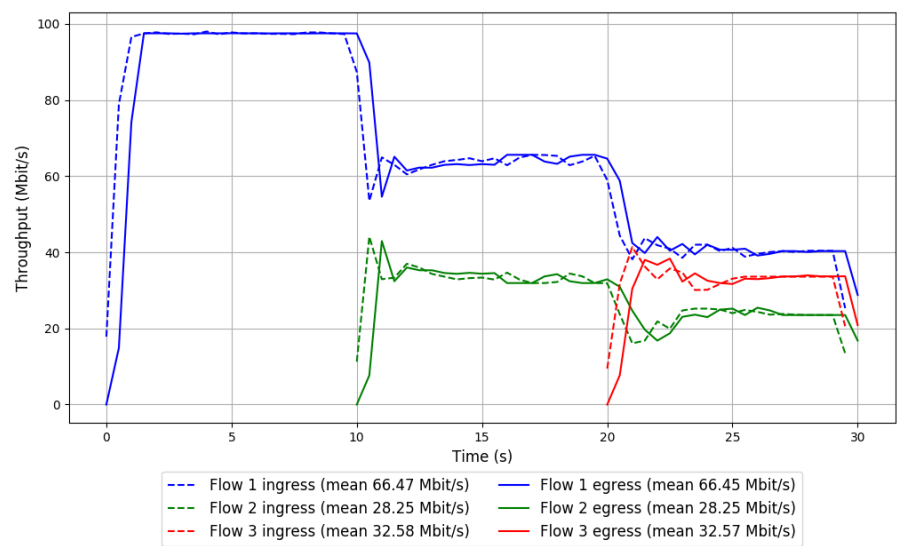Run 5: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 58.31 Mbit/s) --- Flow 1 egress (mean 53.51 Mbit/s)
Flow 2 ingress (mean 43.35 Mbit/s) --- Flow 2 egress (mean 35.84 Mbit/s)
Flow 3 ingress (mean 47.31 Mbit/s) --- Flow 3 egress (mean 37.78 Mbit/s)

Flow 1 (95th percentile 63.22 ms)   Flow 2 (95th percentile 67.53 ms)   Flow 3 (95th percentile 66.61 ms)

54

```
Run 1: Statistics of Indigo

Start at: 2019-01-03 00:10:32
End at: 2019-01-03 00:11:02
Local clock offset: 0.304 ms
Remote clock offset: -3.647 ms


# Below is generated by plot.py at 2019-01-03 02:05:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.85 Mbit/s
95th percentile per-packet one-way delay: 51.442 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 66.45 Mbit/s
95th percentile per-packet one-way delay: 47.444 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 28.25 Mbit/s
95th percentile per-packet one-way delay: 54.443 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 32.57 Mbit/s
95th percentile per-packet one-way delay: 61.407 ms
Loss rate: 0.00%
```

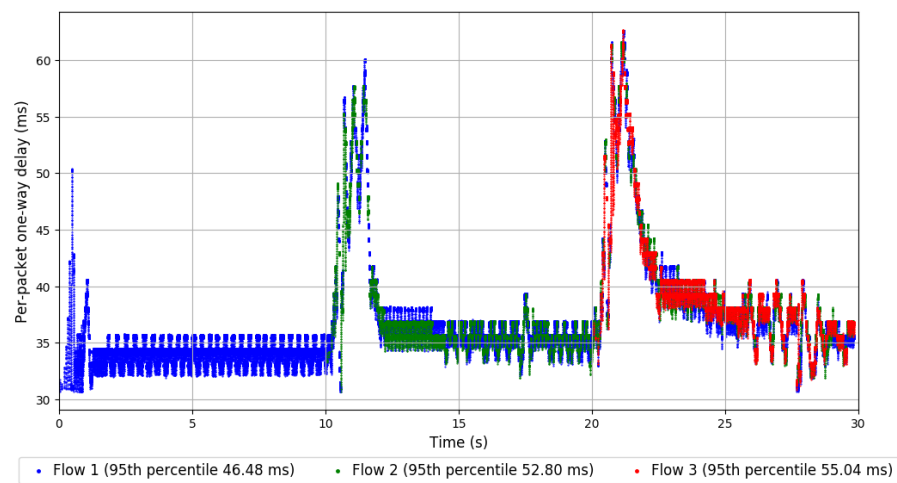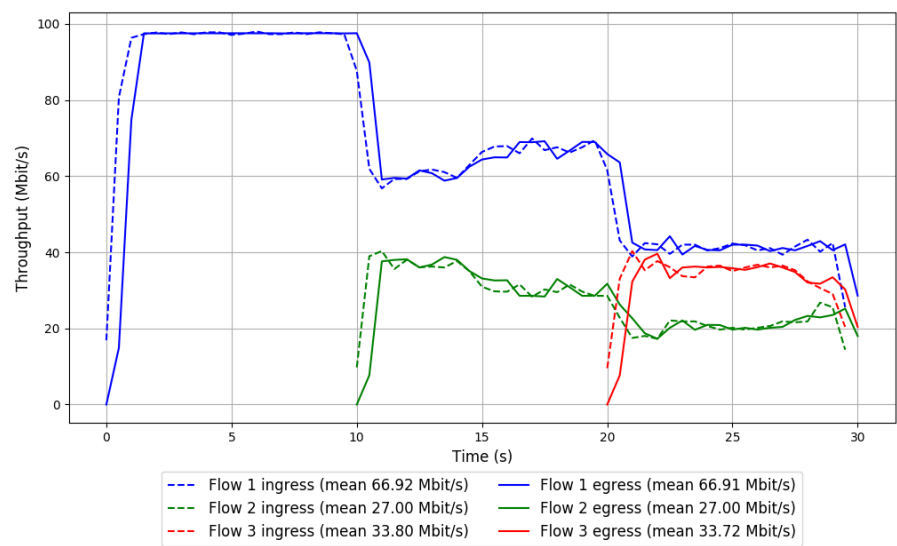Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2019-01-03 00:33:50
End at: 2019-01-03 00:34:20
Local clock offset: 0.193 ms
Remote clock offset: -3.312 ms


# Below is generated by plot.py at 2019-01-03 02:05:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.83 Mbit/s
95th percentile per-packet one-way delay: 50.414 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 66.91 Mbit/s
95th percentile per-packet one-way delay: 46.482 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 27.00 Mbit/s
95th percentile per-packet one-way delay: 52.799 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 33.72 Mbit/s
95th percentile per-packet one-way delay: 55.044 ms
Loss rate: 0.23%
```

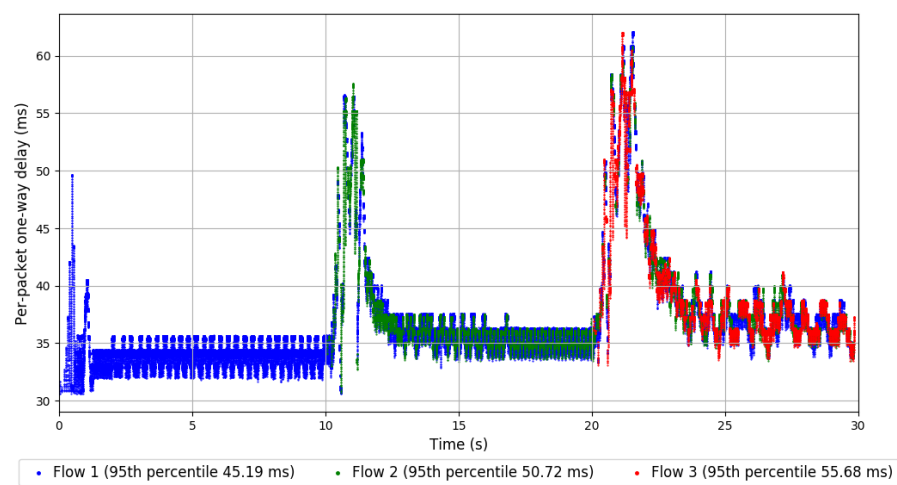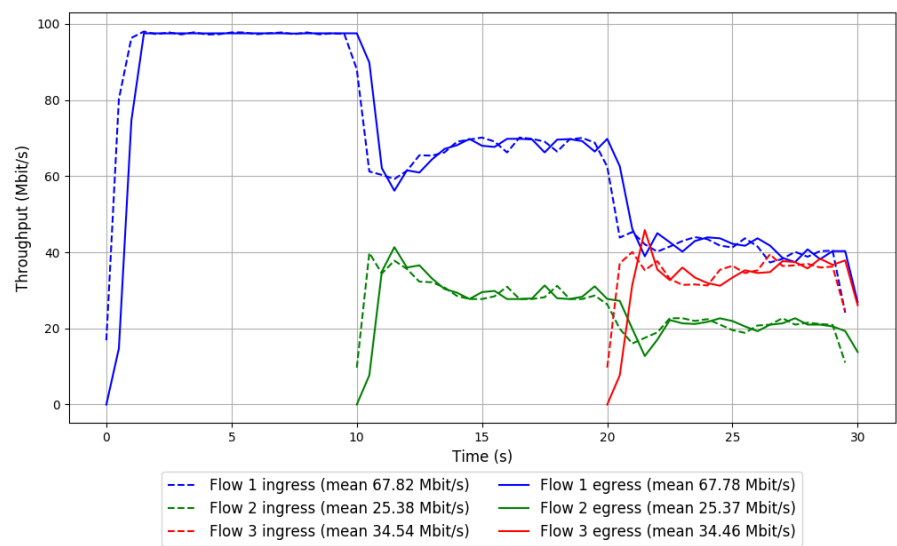Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2019-01-03 00:56:49
End at: 2019-01-03 00:57:19
Local clock offset: 0.196 ms
Remote clock offset: -3.132 ms


# Below is generated by plot.py at 2019-01-03 02:05:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.85 Mbit/s
95th percentile per-packet one-way delay: 49.378 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 67.78 Mbit/s
95th percentile per-packet one-way delay: 45.193 ms
Loss rate: 0.05%
-- Flow 2:
Average throughput: 25.37 Mbit/s
95th percentile per-packet one-way delay: 50.723 ms
Loss rate: 0.05%
-- Flow 3:
Average throughput: 34.46 Mbit/s
95th percentile per-packet one-way delay: 55.676 ms
Loss rate: 0.21%
```

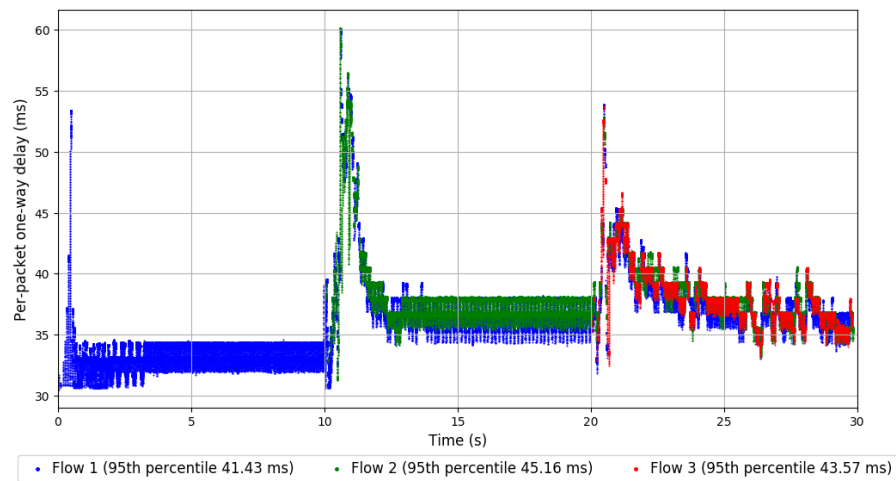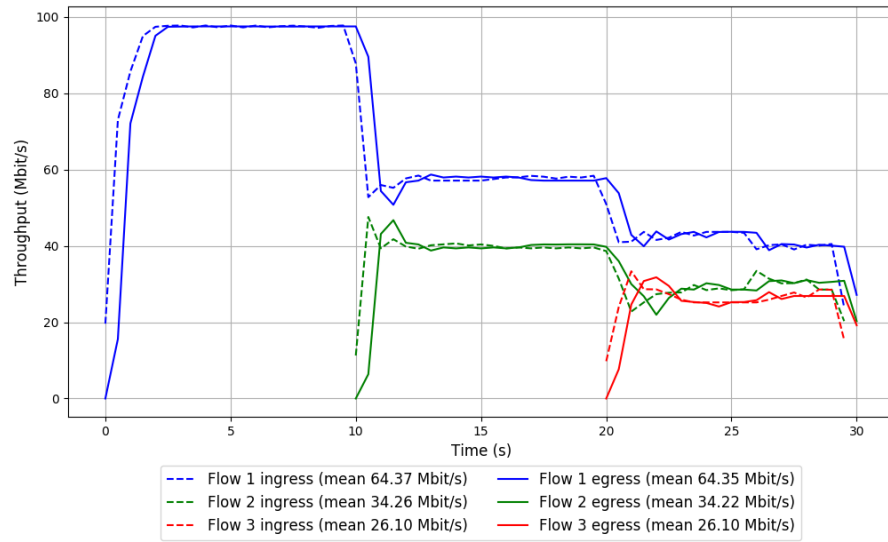Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2019-01-03 01:19:48
End at: 2019-01-03 01:20:18
Local clock offset: 0.331 ms
Remote clock offset: -2.906 ms


# Below is generated by plot.py at 2019-01-03 02:05:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.54 Mbit/s
95th percentile per-packet one-way delay: 42.671 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 64.35 Mbit/s
95th percentile per-packet one-way delay: 41.426 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 34.22 Mbit/s
95th percentile per-packet one-way delay: 45.161 ms
Loss rate: 0.15%
-- Flow 3:
Average throughput: 26.10 Mbit/s
95th percentile per-packet one-way delay: 43.572 ms
Loss rate: 0.00%
```

Run 4: Report of Indigo — Data Link

```
Run 5: Statistics of Indigo

Start at: 2019-01-03 01:43:03
End at: 2019-01-03 01:43:33
Local clock offset: 0.209 ms
Remote clock offset: -2.49 ms


# Below is generated by plot.py at 2019-01-03 02:05:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 95.84 Mbit/s
95th percentile per-packet one-way delay: 44.679 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 69.17 Mbit/s
95th percentile per-packet one-way delay: 41.661 ms
Loss rate: 0.06%
-- Flow 2:
Average throughput: 23.23 Mbit/s
95th percentile per-packet one-way delay: 45.490 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 34.41 Mbit/s
95th percentile per-packet one-way delay: 56.558 ms
Loss rate: 0.38%
```
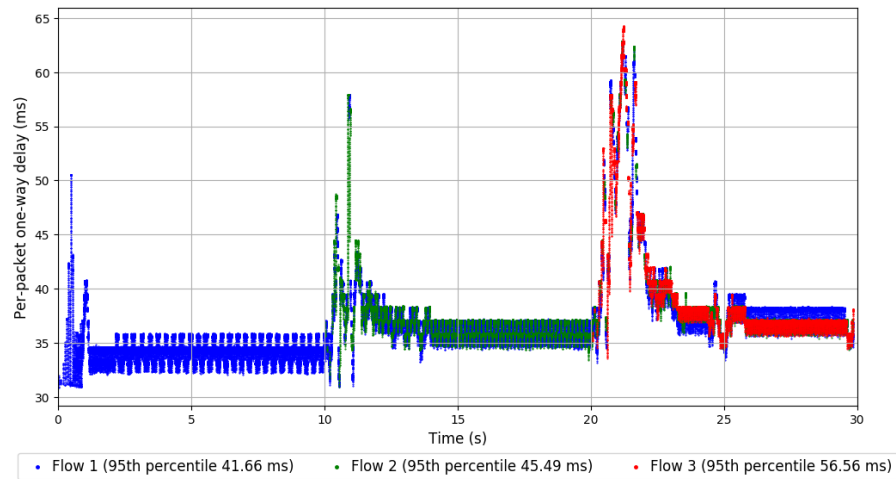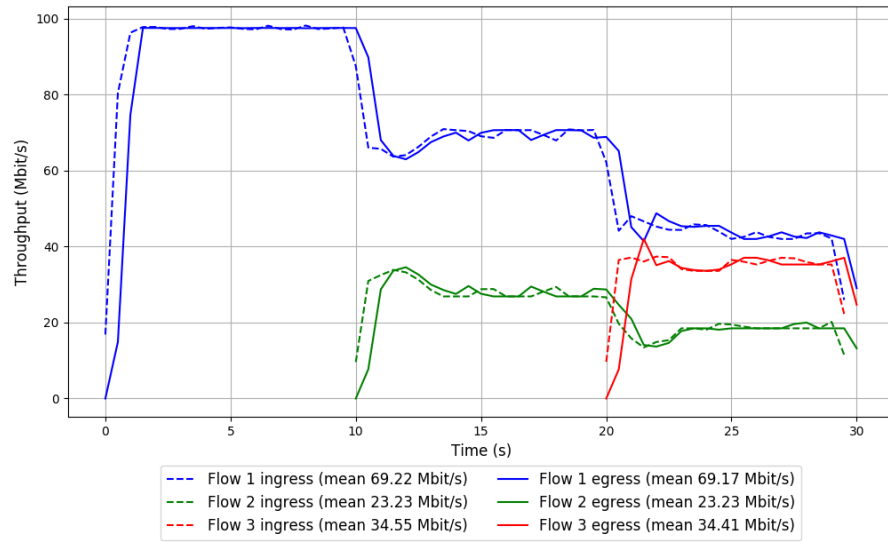
Run 5: Report of Indigo — Data Link

- - - Flow 1 ingress (mean 69.22 Mbit/s) ——— Flow 1 egress (mean 69.17 Mbit/s)
- - - Flow 2 ingress (mean 23.23 Mbit/s) ——— Flow 2 egress (mean 23.23 Mbit/s)
- - - Flow 3 ingress (mean 34.55 Mbit/s) ——— Flow 3 egress (mean 34.41 Mbit/s)

• Flow 1 (95th percentile 41.66 ms)   • Flow 2 (95th percentile 45.49 ms)   • Flow 3 (95th percentile 56.56 ms)

```
Run 1: Statistics of Indigo-MusesD

Start at: 2019-01-03 00:18:05
End at: 2019-01-03 00:18:35
Local clock offset: 0.345 ms
Remote clock offset: -3.53 ms


# Below is generated by plot.py at 2019-01-03 02:05:42
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.00 Mbit/s
95th percentile per-packet one-way delay: 42.194 ms
Loss rate: 0.50%
-- Flow 1:
Average throughput: 58.31 Mbit/s
95th percentile per-packet one-way delay: 42.241 ms
Loss rate: 0.80%
-- Flow 2:
Average throughput: 28.72 Mbit/s
95th percentile per-packet one-way delay: 43.276 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 50.40 Mbit/s
95th percentile per-packet one-way delay: 40.662 ms
Loss rate: 0.00%
```
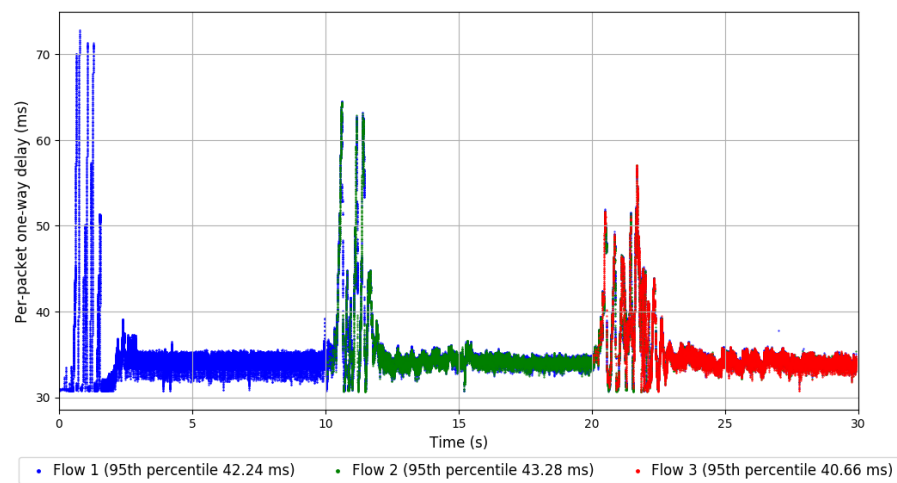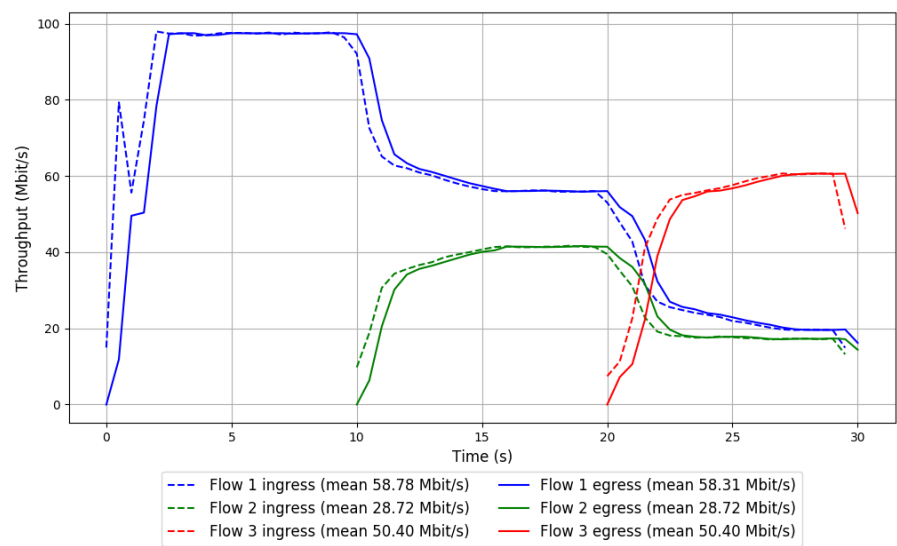
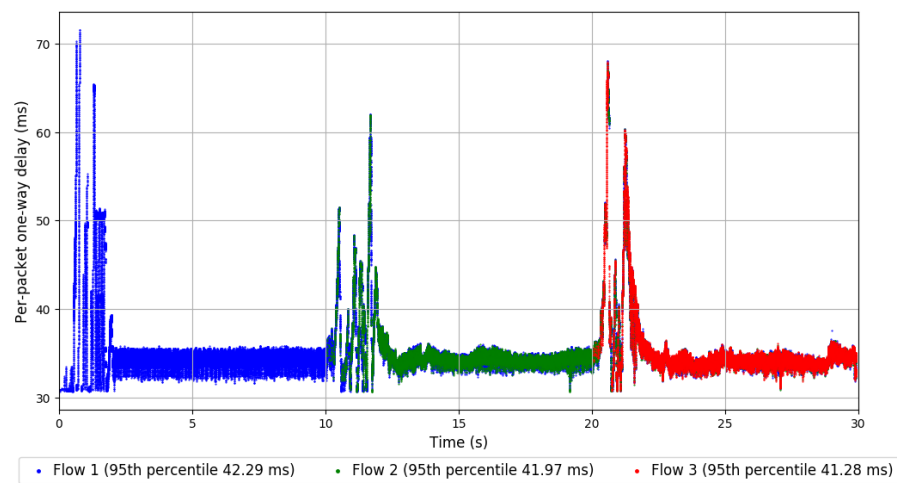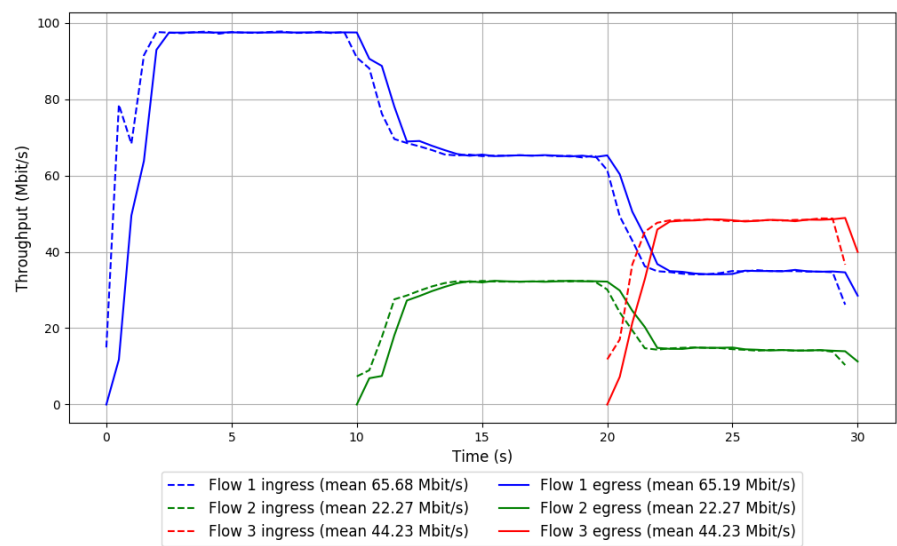Run 1: Report of Indigo-MusesD — Data Link

```
Run 2: Statistics of Indigo-MusesD

Start at: 2019-01-03 00:41:19
End at: 2019-01-03 00:41:49
Local clock offset: 0.15 ms
Remote clock offset: -3.179 ms


# Below is generated by plot.py at 2019-01-03 02:05:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.59 Mbit/s
95th percentile per-packet one-way delay: 42.118 ms
Loss rate: 0.50%
-- Flow 1:
Average throughput: 65.19 Mbit/s
95th percentile per-packet one-way delay: 42.292 ms
Loss rate: 0.73%
-- Flow 2:
Average throughput: 22.27 Mbit/s
95th percentile per-packet one-way delay: 41.973 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 44.23 Mbit/s
95th percentile per-packet one-way delay: 41.279 ms
Loss rate: 0.00%
```

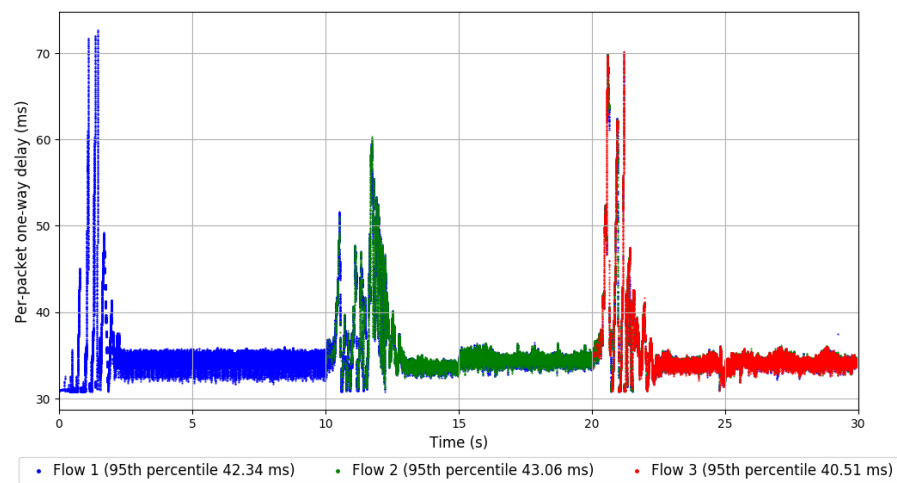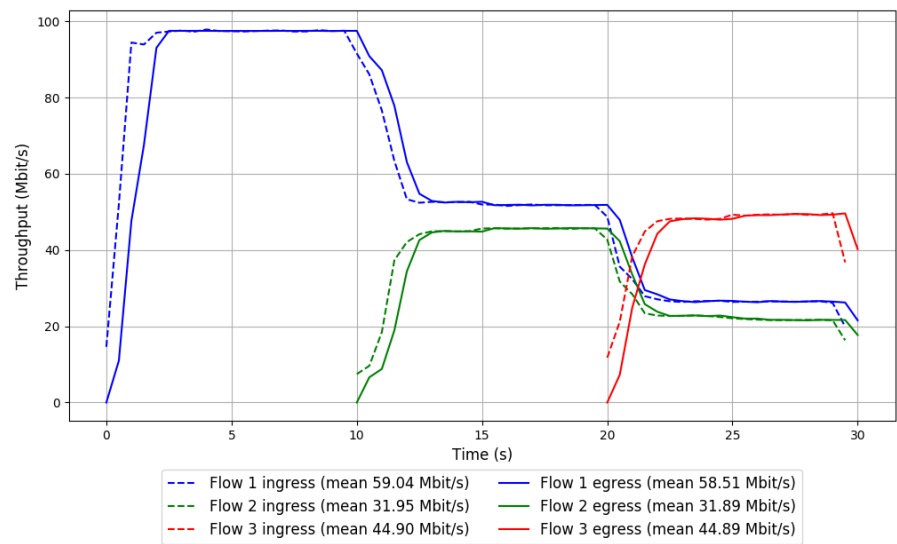Run 2: Report of Indigo-MusesD — Data Link

```
Run 3: Statistics of Indigo-MusesD

Start at: 2019-01-03 01:04:05
End at: 2019-01-03 01:04:35
Local clock offset: 0.231 ms
Remote clock offset: -2.874 ms

# Below is generated by plot.py at 2019-01-03 02:06:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.52 Mbit/s
95th percentile per-packet one-way delay: 42.171 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 58.51 Mbit/s
95th percentile per-packet one-way delay: 42.345 ms
Loss rate: 0.88%
-- Flow 2:
Average throughput: 31.89 Mbit/s
95th percentile per-packet one-way delay: 43.057 ms
Loss rate: 0.20%
-- Flow 3:
Average throughput: 44.89 Mbit/s
95th percentile per-packet one-way delay: 40.508 ms
Loss rate: 0.04%
```

Run 3: Report of Indigo-MusesD — Data Link

```
Run 4: Statistics of Indigo-MusesD

Start at: 2019-01-03 01:27:02
End at: 2019-01-03 01:27:32
Local clock offset: 0.321 ms
Remote clock offset: -2.64 ms

# Below is generated by plot.py at 2019-01-03 02:06:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.68 Mbit/s
95th percentile per-packet one-way delay: 43.953 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 54.69 Mbit/s
95th percentile per-packet one-way delay: 44.332 ms
Loss rate: 0.23%
-- Flow 2:
Average throughput: 33.98 Mbit/s
95th percentile per-packet one-way delay: 45.565 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 52.79 Mbit/s
95th percentile per-packet one-way delay: 38.845 ms
Loss rate: 0.00%
```
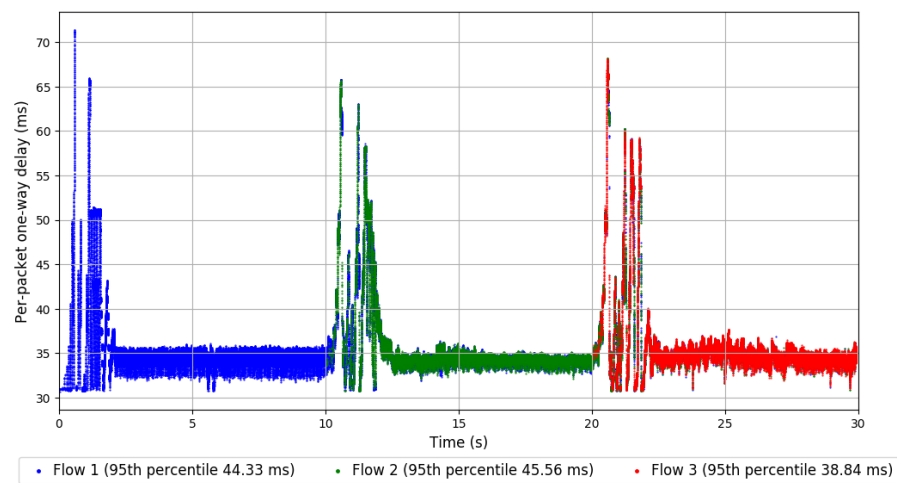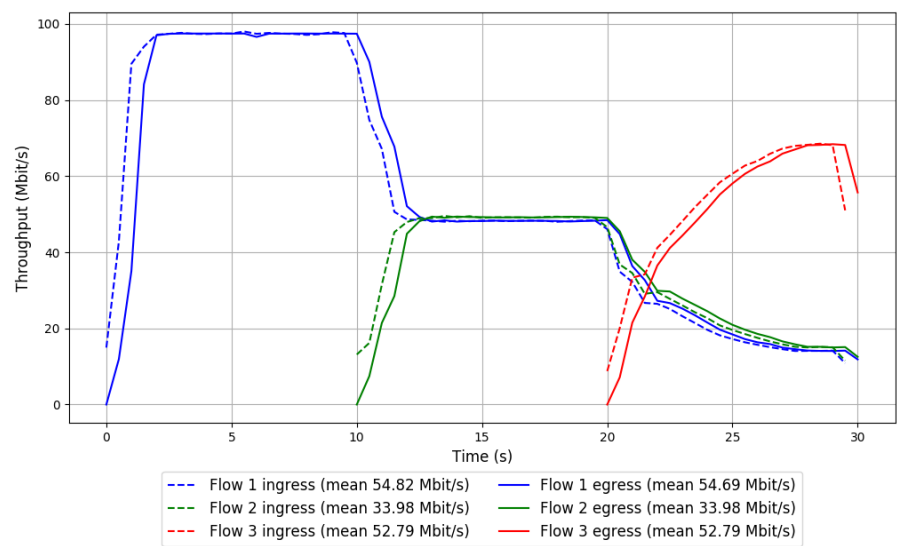
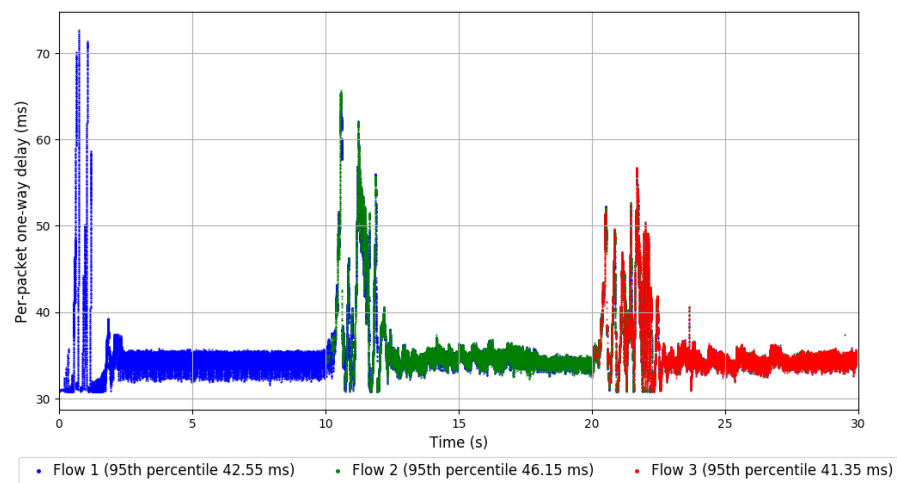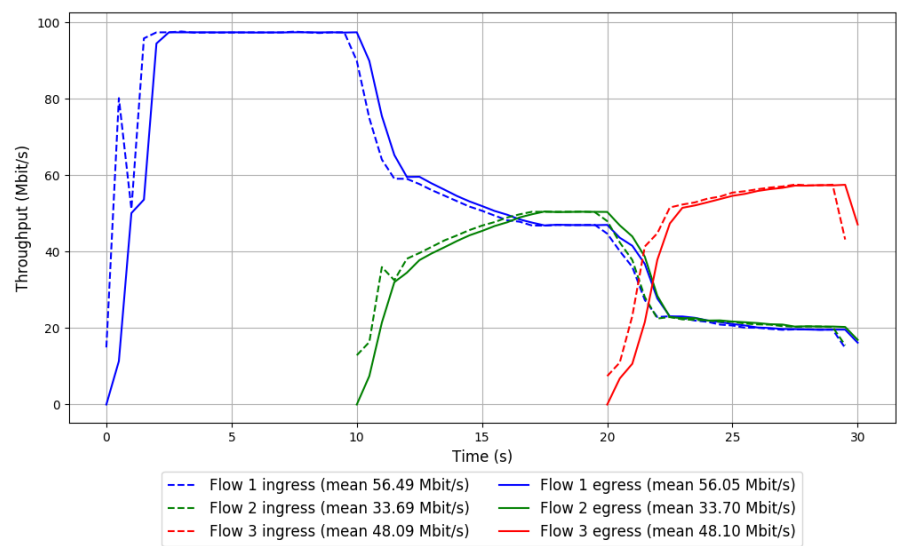Run 4: Report of Indigo-MusesD — Data Link

```
Run 5: Statistics of Indigo-MusesD

Start at: 2019-01-03 01:50:20
End at: 2019-01-03 01:50:50
Local clock offset: 0.219 ms
Remote clock offset: -2.533 ms


# Below is generated by plot.py at 2019-01-03 02:06:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 94.31 Mbit/s
95th percentile per-packet one-way delay: 43.162 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 56.05 Mbit/s
95th percentile per-packet one-way delay: 42.554 ms
Loss rate: 0.77%
-- Flow 2:
Average throughput: 33.70 Mbit/s
95th percentile per-packet one-way delay: 46.151 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 48.10 Mbit/s
95th percentile per-packet one-way delay: 41.348 ms
Loss rate: 0.00%
```

Run 5: Report of Indigo-MusesD — Data Link

Flow 1 ingress (mean 56.49 Mbit/s) ---- Flow 1 egress (mean 56.05 Mbit/s)
Flow 2 ingress (mean 33.69 Mbit/s) ---- Flow 2 egress (mean 33.70 Mbit/s)
Flow 3 ingress (mean 48.09 Mbit/s) ---- Flow 3 egress (mean 48.10 Mbit/s)

Flow 1 (95th percentile 42.55 ms)   Flow 2 (95th percentile 46.15 ms)   Flow 3 (95th percentile 41.35 ms)
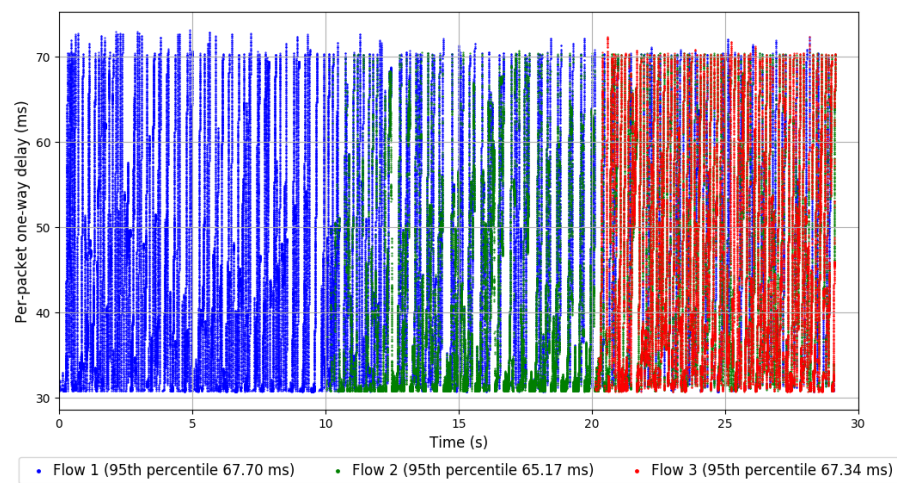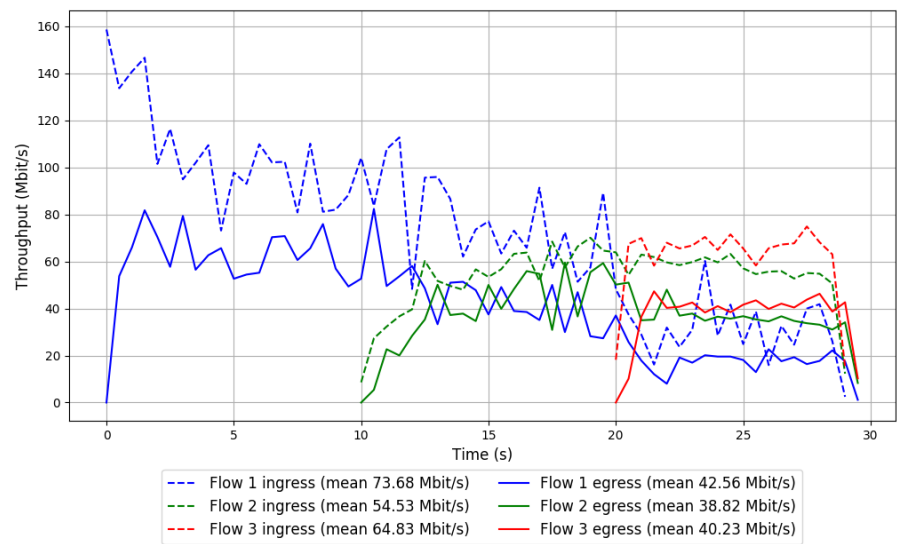
74

```
Run 1: Statistics of Indigo-MusesT

Start at: 2019-01-03 00:26:35
End at: 2019-01-03 00:27:05
Local clock offset: 0.319 ms
Remote clock offset: -3.369 ms


# Below is generated by plot.py at 2019-01-03 02:06:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 80.46 Mbit/s
95th percentile per-packet one-way delay: 67.089 ms
Loss rate: 37.86%
-- Flow 1:
Average throughput: 42.56 Mbit/s
95th percentile per-packet one-way delay: 67.704 ms
Loss rate: 42.24%
-- Flow 2:
Average throughput: 38.82 Mbit/s
95th percentile per-packet one-way delay: 65.174 ms
Loss rate: 28.79%
-- Flow 3:
Average throughput: 40.23 Mbit/s
95th percentile per-packet one-way delay: 67.341 ms
Loss rate: 37.93%
```

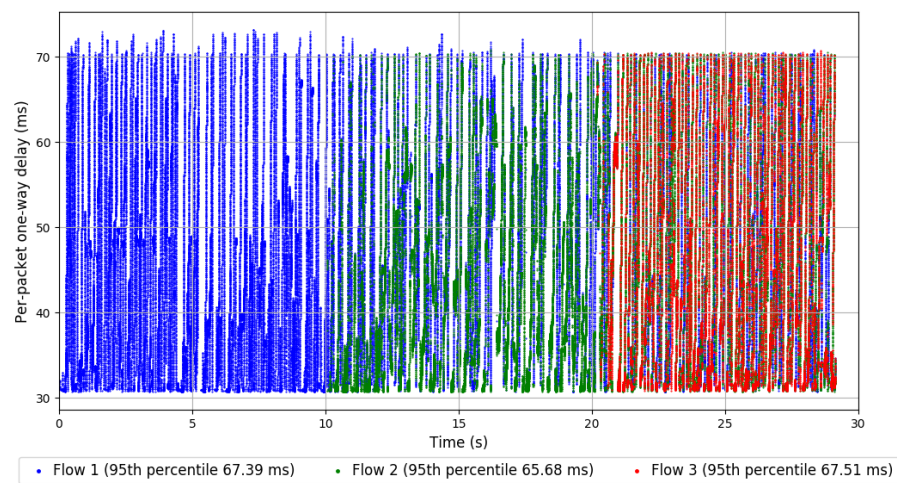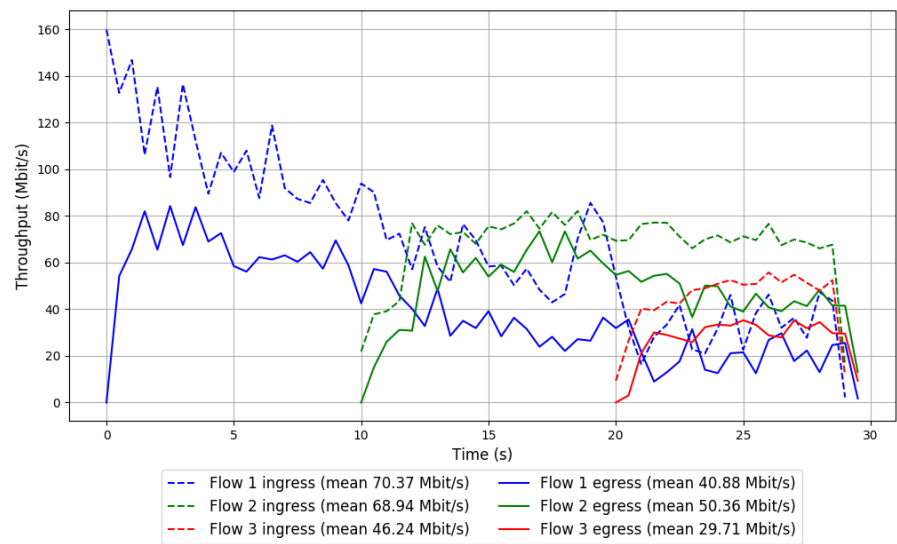Run 1: Report of Indigo-MusesT — Data Link

```
Run 2: Statistics of Indigo-MusesT

Start at: 2019-01-03 00:49:41
End at: 2019-01-03 00:50:11
Local clock offset: 0.159 ms
Remote clock offset: -3.036 ms


# Below is generated by plot.py at 2019-01-03 02:06:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 83.02 Mbit/s
95th percentile per-packet one-way delay: 66.865 ms
Loss rate: 36.05%
-- Flow 1:
Average throughput: 40.88 Mbit/s
95th percentile per-packet one-way delay: 67.387 ms
Loss rate: 41.90%
-- Flow 2:
Average throughput: 50.36 Mbit/s
95th percentile per-packet one-way delay: 65.678 ms
Loss rate: 26.98%
-- Flow 3:
Average throughput: 29.71 Mbit/s
95th percentile per-packet one-way delay: 67.506 ms
Loss rate: 35.97%
```

Run 2: Report of Indigo-MusesT — Data Link

- - - Flow 1 ingress (mean 70.37 Mbit/s)   —— Flow 1 egress (mean 40.88 Mbit/s)
- - - Flow 2 ingress (mean 68.94 Mbit/s)   —— Flow 2 egress (mean 50.36 Mbit/s)
- - - Flow 3 ingress (mean 46.24 Mbit/s)   —— Flow 3 egress (mean 29.71 Mbit/s)

• Flow 1 (95th percentile 67.39 ms)   • Flow 2 (95th percentile 65.68 ms)   • Flow 3 (95th percentile 67.51 ms)
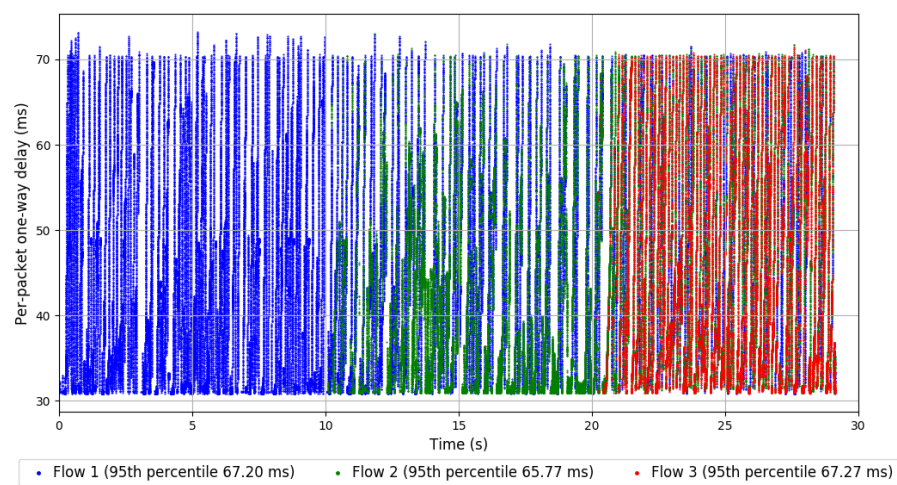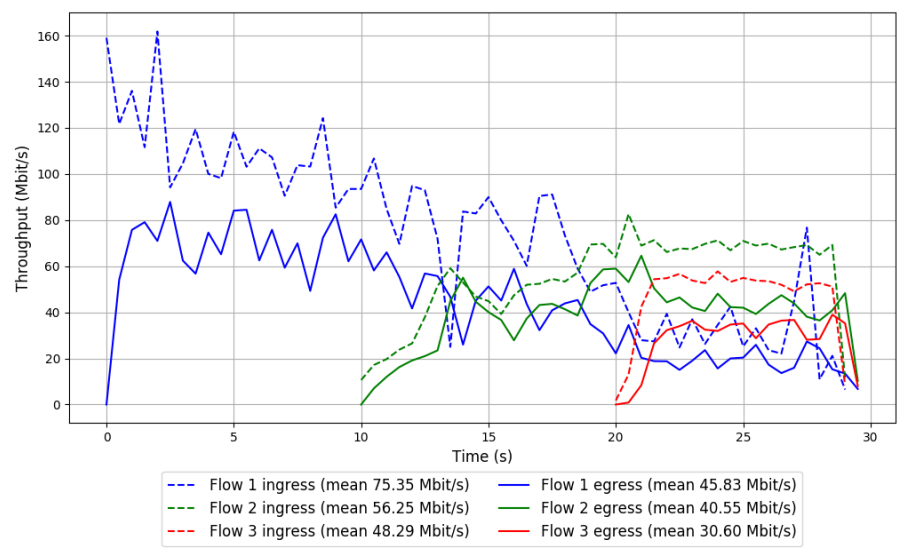
```
Run 3: Statistics of Indigo-MusesT

Start at: 2019-01-03 01:12:38
End at: 2019-01-03 01:13:08
Local clock offset: 0.276 ms
Remote clock offset: -2.795 ms


# Below is generated by plot.py at 2019-01-03 02:06:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 81.77 Mbit/s
95th percentile per-packet one-way delay: 66.835 ms
Loss rate: 35.64%
-- Flow 1:
Average throughput: 45.83 Mbit/s
95th percentile per-packet one-way delay: 67.199 ms
Loss rate: 39.17%
-- Flow 2:
Average throughput: 40.55 Mbit/s
95th percentile per-packet one-way delay: 65.767 ms
Loss rate: 27.89%
-- Flow 3:
Average throughput: 30.60 Mbit/s
95th percentile per-packet one-way delay: 67.267 ms
Loss rate: 36.88%
```

Run 3: Report of Indigo-MusesT — Data Link

- - - Flow 1 ingress (mean 75.35 Mbit/s) ——— Flow 1 egress (mean 45.83 Mbit/s)
- - - Flow 2 ingress (mean 56.25 Mbit/s) ——— Flow 2 egress (mean 40.55 Mbit/s)
- - - Flow 3 ingress (mean 48.29 Mbit/s) ——— Flow 3 egress (mean 30.60 Mbit/s)

• Flow 1 (95th percentile 67.20 ms)   • Flow 2 (95th percentile 65.77 ms)   • Flow 3 (95th percentile 67.27 ms)
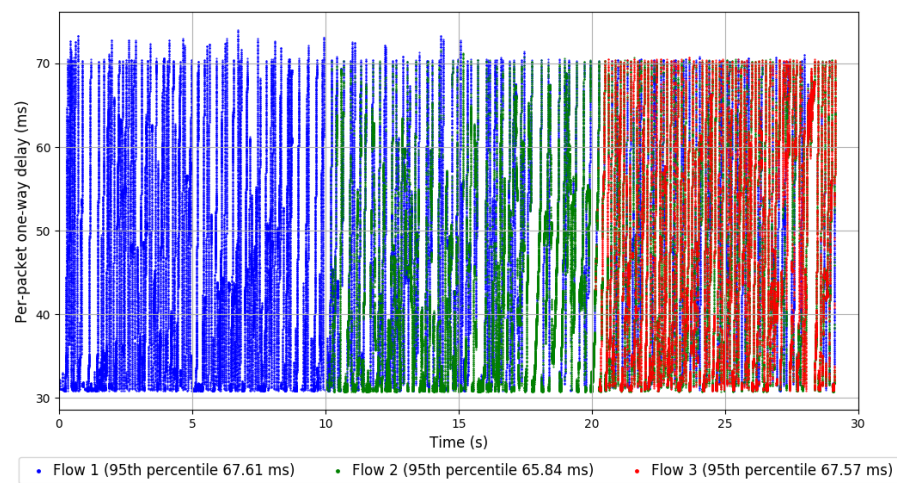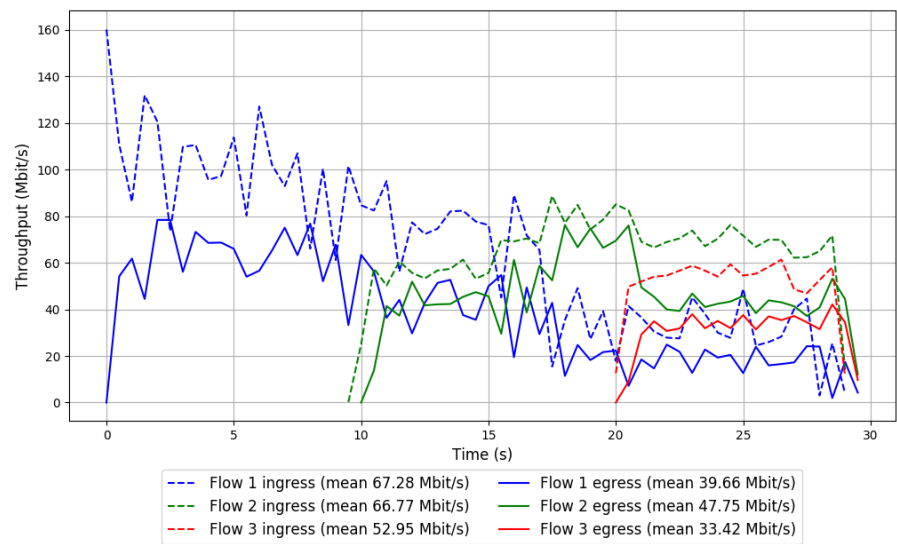
```
Run 4: Statistics of Indigo-MusesT

Start at: 2019-01-03 01:35:34
End at: 2019-01-03 01:36:04
Local clock offset: 0.241 ms
Remote clock offset: -2.592 ms


# Below is generated by plot.py at 2019-01-03 02:06:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 81.37 Mbit/s
95th percentile per-packet one-way delay: 66.998 ms
Loss rate: 36.16%
-- Flow 1:
Average throughput: 39.66 Mbit/s
95th percentile per-packet one-way delay: 67.610 ms
Loss rate: 41.04%
-- Flow 2:
Average throughput: 47.75 Mbit/s
95th percentile per-packet one-way delay: 65.844 ms
Loss rate: 28.41%
-- Flow 3:
Average throughput: 33.42 Mbit/s
95th percentile per-packet one-way delay: 67.572 ms
Loss rate: 36.85%
```

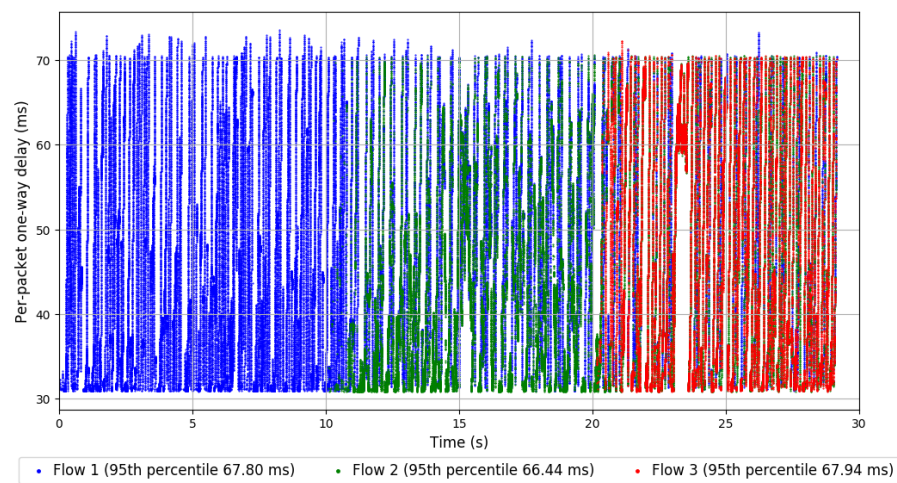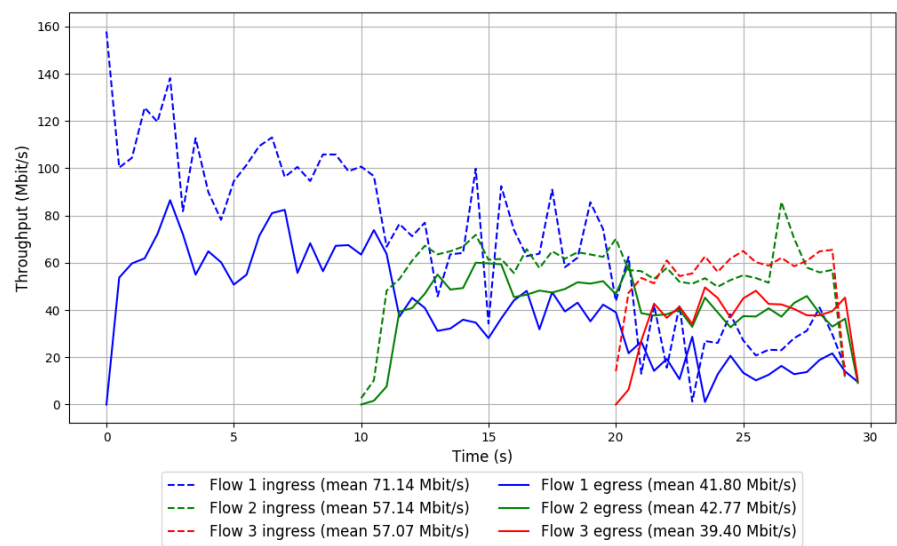Run 4: Report of Indigo-MusesT — Data Link

```
Run 5: Statistics of Indigo-MusesT

Start at: 2019-01-03 01:58:51
End at: 2019-01-03 01:59:21
Local clock offset: 0.208 ms
Remote clock offset: -2.476 ms


# Below is generated by plot.py at 2019-01-03 02:07:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 81.95 Mbit/s
95th percentile per-packet one-way delay: 67.374 ms
Loss rate: 35.04%
-- Flow 1:
Average throughput: 41.80 Mbit/s
95th percentile per-packet one-way delay: 67.801 ms
Loss rate: 41.21%
-- Flow 2:
Average throughput: 42.77 Mbit/s
95th percentile per-packet one-way delay: 66.445 ms
Loss rate: 25.27%
-- Flow 3:
Average throughput: 39.40 Mbit/s
95th percentile per-packet one-way delay: 67.942 ms
Loss rate: 30.88%
```

Run 5: Report of Indigo-MusesT — Data Link

- - - Flow 1 ingress (mean 71.14 Mbit/s) —— Flow 1 egress (mean 41.80 Mbit/s)
- - - Flow 2 ingress (mean 57.14 Mbit/s) —— Flow 2 egress (mean 42.77 Mbit/s)
- - - Flow 3 ingress (mean 57.07 Mbit/s) —— Flow 3 egress (mean 39.40 Mbit/s)

- Flow 1 (95th percentile 67.80 ms)   • Flow 2 (95th percentile 66.44 ms)   • Flow 3 (95th percentile 67.94 ms)
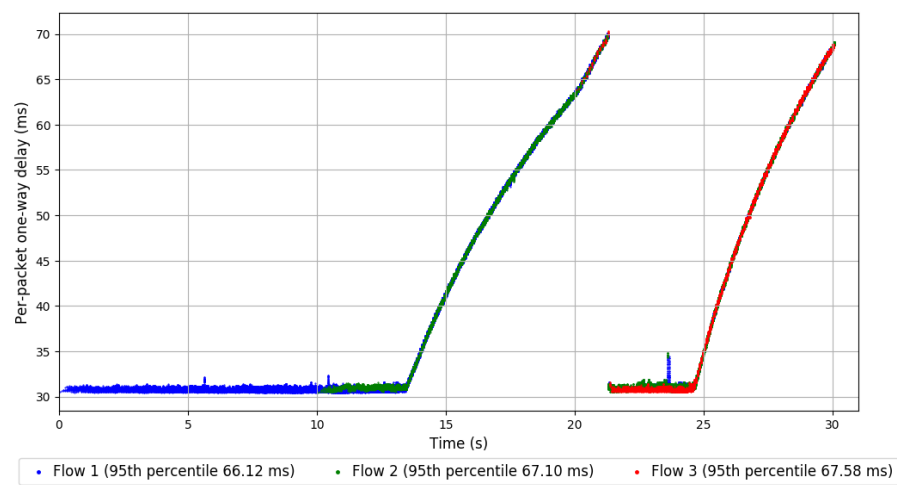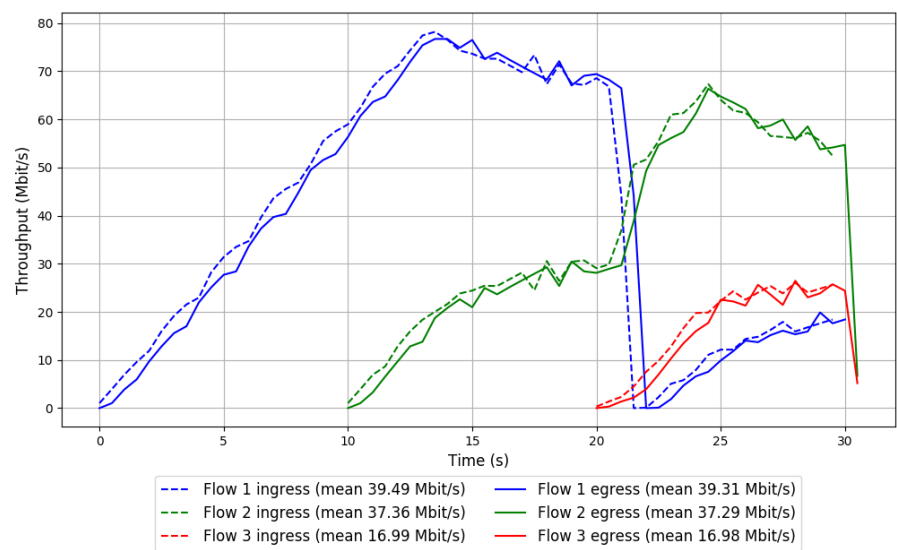
```
Run 1: Statistics of LEDBAT

Start at: 2019-01-03 00:07:57
End at: 2019-01-03 00:08:27
Local clock offset: 0.326 ms
Remote clock offset: -3.855 ms

# Below is generated by plot.py at 2019-01-03 02:07:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 69.71 Mbit/s
95th percentile per-packet one-way delay: 66.656 ms
Loss rate: 0.18%
-- Flow 1:
Average throughput: 39.31 Mbit/s
95th percentile per-packet one-way delay: 66.124 ms
Loss rate: 0.32%
-- Flow 2:
Average throughput: 37.29 Mbit/s
95th percentile per-packet one-way delay: 67.099 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 16.98 Mbit/s
95th percentile per-packet one-way delay: 67.582 ms
Loss rate: 0.05%
```

Run 1: Report of LEDBAT — Data Link

Flow 1 ingress (mean 39.49 Mbit/s) --- Flow 1 egress (mean 39.31 Mbit/s)
Flow 2 ingress (mean 37.36 Mbit/s) --- Flow 2 egress (mean 37.29 Mbit/s)
Flow 3 ingress (mean 16.99 Mbit/s) --- Flow 3 egress (mean 16.98 Mbit/s)

Flow 1 (95th percentile 66.12 ms)   Flow 2 (95th percentile 67.10 ms)   Flow 3 (95th percentile 67.58 ms)

```
Run 2: Statistics of LEDBAT

Start at: 2019-01-03 00:31:20
End at: 2019-01-03 00:31:50
Local clock offset: 0.233 ms
Remote clock offset: -3.27 ms

# Below is generated by plot.py at 2019-01-03 02:07:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 62.14 Mbit/s
95th percentile per-packet one-way delay: 65.188 ms
Loss rate: 0.20%
-- Flow 1:
Average throughput: 41.10 Mbit/s
95th percentile per-packet one-way delay: 65.412 ms
Loss rate: 0.06%
-- Flow 2:
Average throughput: 19.79 Mbit/s
95th percentile per-packet one-way delay: 66.429 ms
Loss rate: 0.77%
-- Flow 3:
Average throughput: 23.73 Mbit/s
95th percentile per-packet one-way delay: 52.623 ms
Loss rate: 0.00%
```
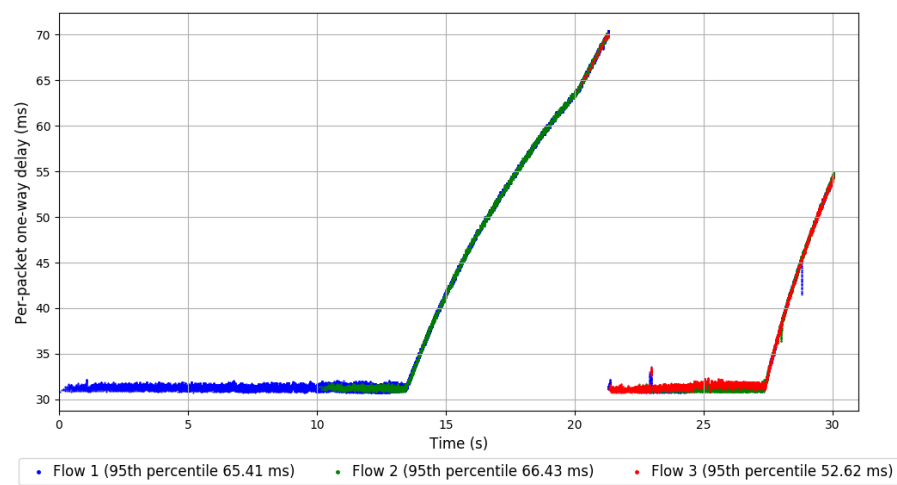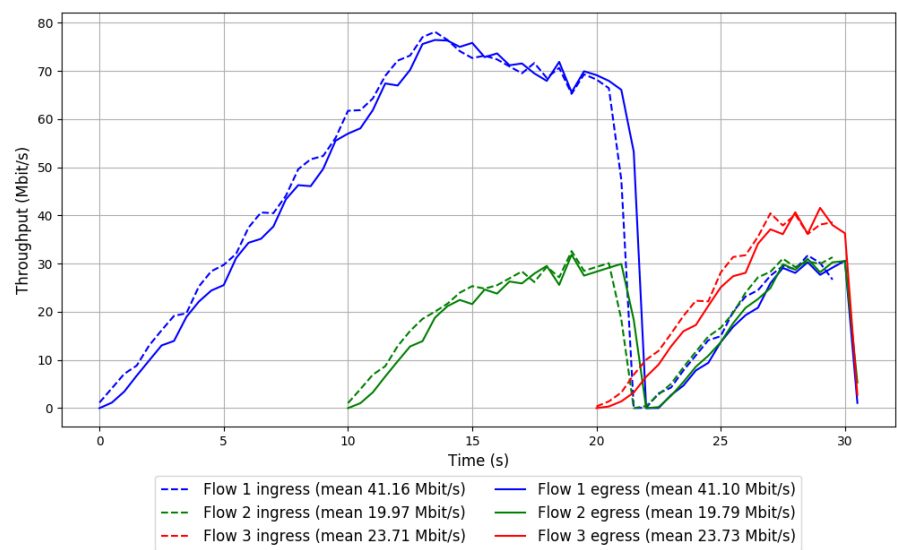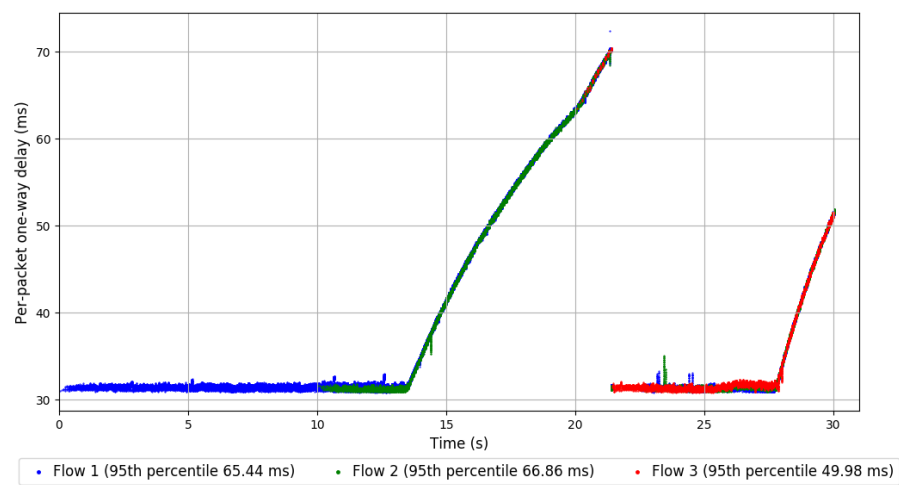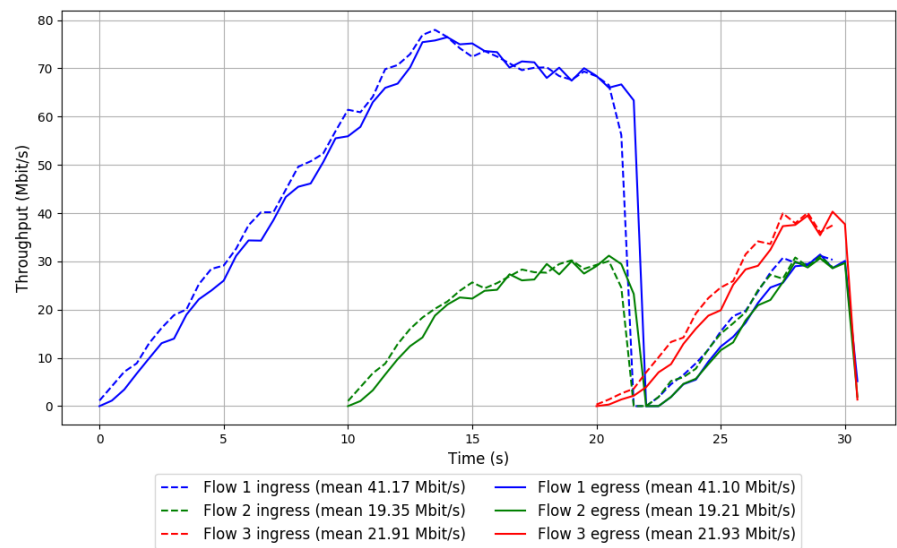
Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2019-01-03 00:54:24
End at: 2019-01-03 00:54:54
Local clock offset: 0.179 ms
Remote clock offset: -3.026 ms


# Below is generated by plot.py at 2019-01-03 02:07:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 61.13 Mbit/s
95th percentile per-packet one-way delay: 65.382 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 41.10 Mbit/s
95th percentile per-packet one-way delay: 65.443 ms
Loss rate: 0.10%
-- Flow 2:
Average throughput: 19.21 Mbit/s
95th percentile per-packet one-way delay: 66.861 ms
Loss rate: 0.66%
-- Flow 3:
Average throughput: 21.93 Mbit/s
95th percentile per-packet one-way delay: 49.978 ms
Loss rate: 0.03%
```

Run 3: Report of LEDBAT — Data Link

- - - Flow 1 ingress (mean 41.17 Mbit/s) ——— Flow 1 egress (mean 41.10 Mbit/s)
- - - Flow 2 ingress (mean 19.35 Mbit/s) ——— Flow 2 egress (mean 19.21 Mbit/s)
- - - Flow 3 ingress (mean 21.91 Mbit/s) ——— Flow 3 egress (mean 21.93 Mbit/s)

• Flow 1 (95th percentile 65.44 ms)   • Flow 2 (95th percentile 66.86 ms)   • Flow 3 (95th percentile 49.98 ms)
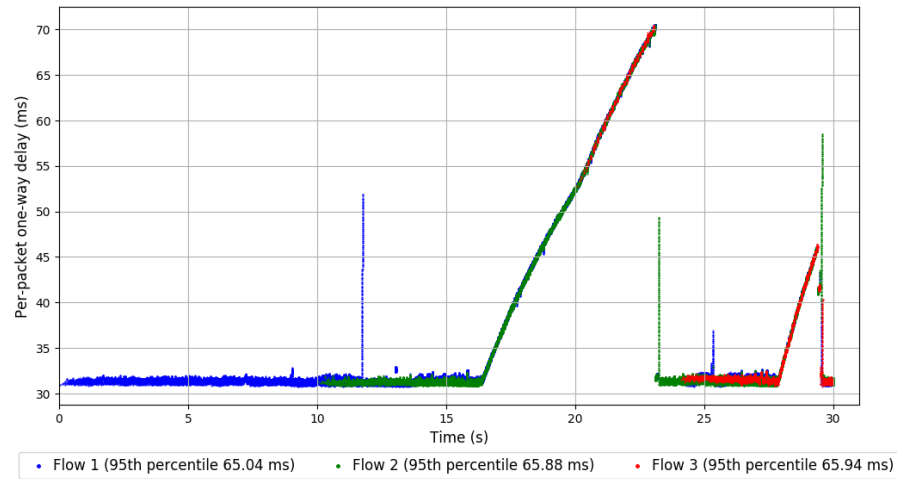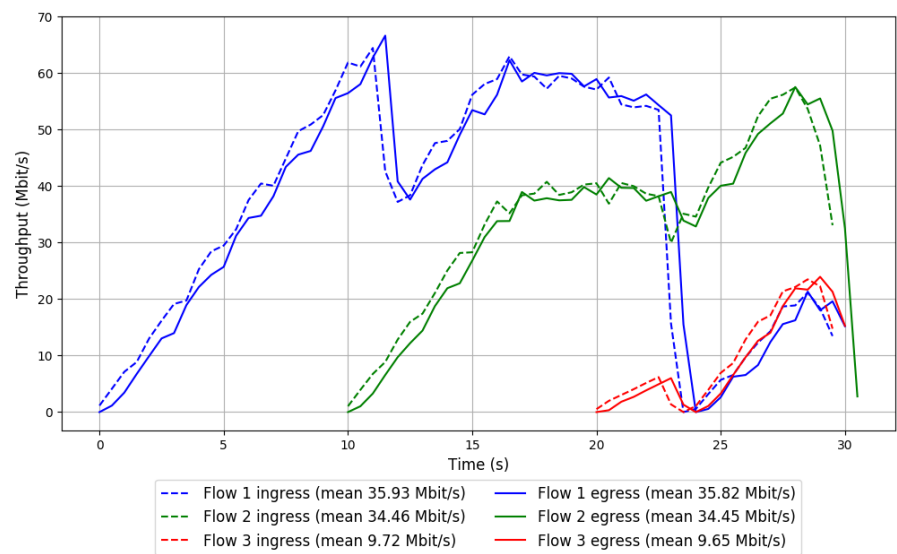
```
Run 4: Statistics of LEDBAT

Start at: 2019-01-03 01:17:22
End at: 2019-01-03 01:17:52
Local clock offset: 0.319 ms
Remote clock offset: -2.761 ms


# Below is generated by plot.py at 2019-01-03 02:07:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 61.93 Mbit/s
95th percentile per-packet one-way delay: 65.428 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 35.82 Mbit/s
95th percentile per-packet one-way delay: 65.040 ms
Loss rate: 0.30%
-- Flow 2:
Average throughput: 34.45 Mbit/s
95th percentile per-packet one-way delay: 65.875 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 9.65 Mbit/s
95th percentile per-packet one-way delay: 65.935 ms
Loss rate: 0.95%
```
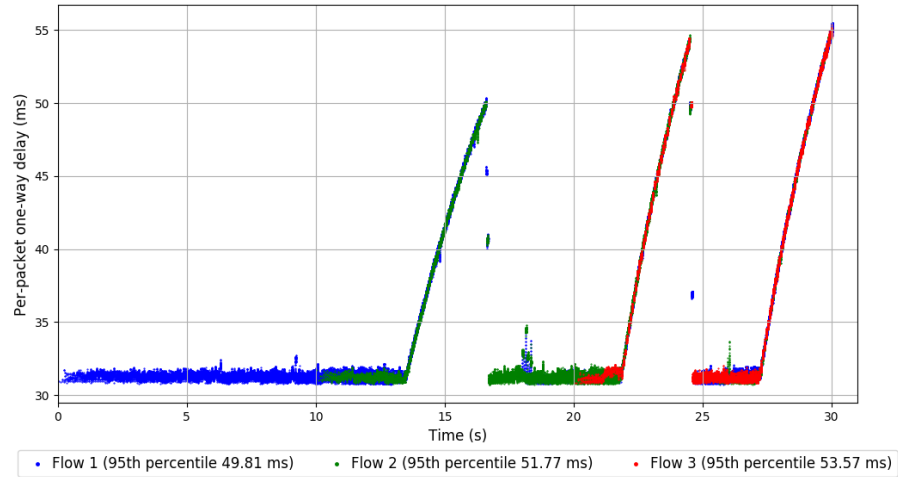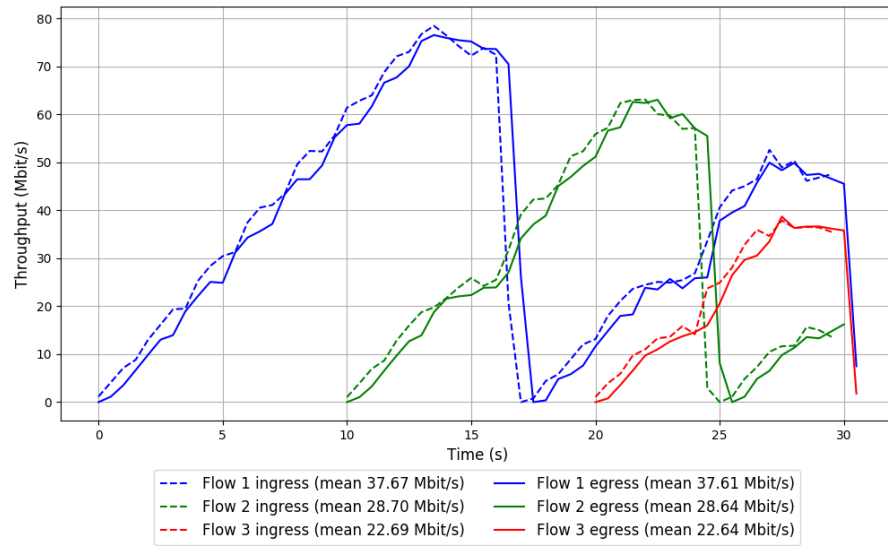
Run 4: Report of LEDBAT — Data Link

```
Run 5: Statistics of LEDBAT

Start at: 2019-01-03 01:40:29
End at: 2019-01-03 01:40:59
Local clock offset: 0.208 ms
Remote clock offset: -2.603 ms


# Below is generated by plot.py at 2019-01-03 02:07:24
# Datalink statistics
-- Total of 3 flows:
Average throughput: 64.15 Mbit/s
95th percentile per-packet one-way delay: 51.486 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 37.61 Mbit/s
95th percentile per-packet one-way delay: 49.814 ms
Loss rate: 0.08%
-- Flow 2:
Average throughput: 28.64 Mbit/s
95th percentile per-packet one-way delay: 51.774 ms
Loss rate: 0.08%
-- Flow 3:
Average throughput: 22.64 Mbit/s
95th percentile per-packet one-way delay: 53.573 ms
Loss rate: 0.00%
```
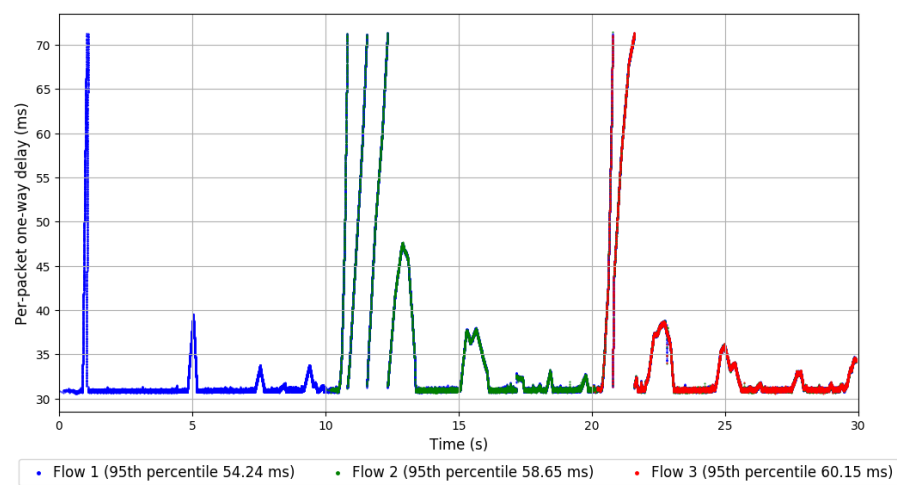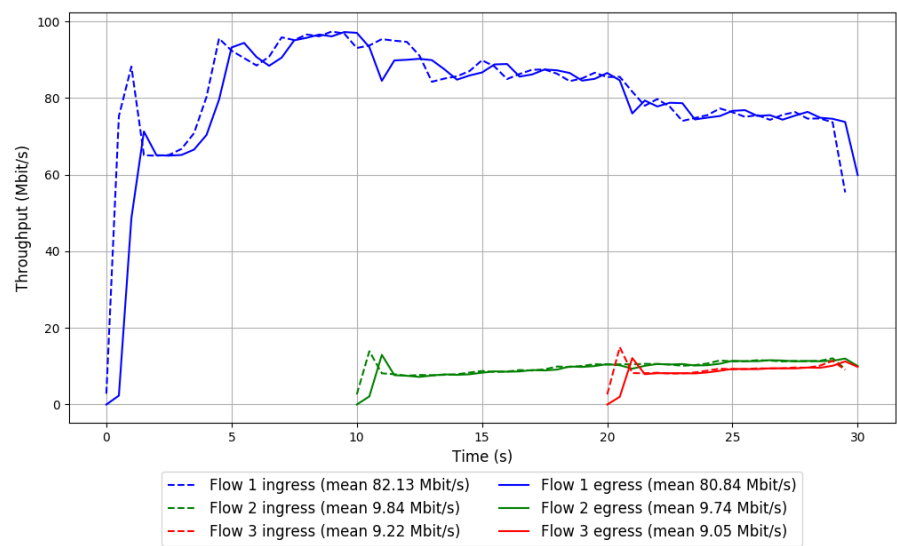
Run 5: Report of LEDBAT — Data Link

```
Run 1: Statistics of PCC-Allegro

Start at: 2019-01-03 00:20:35
End at: 2019-01-03 00:21:05
Local clock offset: 0.383 ms
Remote clock offset: -3.485 ms


# Below is generated by plot.py at 2019-01-03 02:08:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.30 Mbit/s
95th percentile per-packet one-way delay: 54.916 ms
Loss rate: 1.52%
-- Flow 1:
Average throughput: 80.84 Mbit/s
95th percentile per-packet one-way delay: 54.239 ms
Loss rate: 1.55%
-- Flow 2:
Average throughput: 9.74 Mbit/s
95th percentile per-packet one-way delay: 58.650 ms
Loss rate: 0.97%
-- Flow 3:
Average throughput: 9.05 Mbit/s
95th percentile per-packet one-way delay: 60.148 ms
Loss rate: 1.77%
```

Run 1: Report of PCC-Allegro — Data Link

- - - Flow 1 ingress (mean 82.13 Mbit/s) ——— Flow 1 egress (mean 80.84 Mbit/s)
- - - Flow 2 ingress (mean 9.84 Mbit/s) ——— Flow 2 egress (mean 9.74 Mbit/s)
- - - Flow 3 ingress (mean 9.22 Mbit/s) ——— Flow 3 egress (mean 9.05 Mbit/s)

• Flow 1 (95th percentile 54.24 ms) • Flow 2 (95th percentile 58.65 ms) • Flow 3 (95th percentile 60.15 ms)

```
Run 2: Statistics of PCC-Allegro

Start at: 2019-01-03 00:43:46
End at: 2019-01-03 00:44:16
Local clock offset: 0.148 ms
Remote clock offset: -3.13 ms


# Below is generated by plot.py at 2019-01-03 02:08:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.35 Mbit/s
95th percentile per-packet one-way delay: 55.700 ms
Loss rate: 1.36%
-- Flow 1:
Average throughput: 82.17 Mbit/s
95th percentile per-packet one-way delay: 55.447 ms
Loss rate: 1.35%
-- Flow 2:
Average throughput: 9.63 Mbit/s
95th percentile per-packet one-way delay: 57.560 ms
Loss rate: 1.17%
-- Flow 3:
Average throughput: 8.42 Mbit/s
95th percentile per-packet one-way delay: 54.125 ms
Loss rate: 1.93%
```
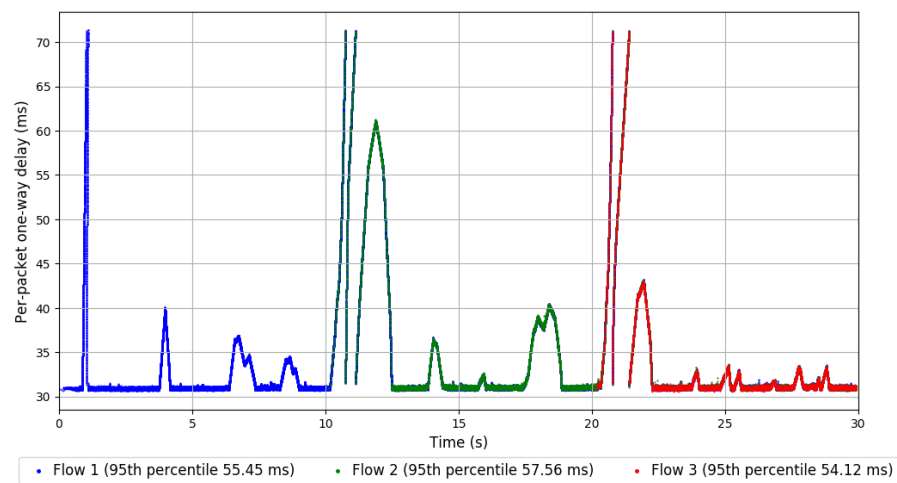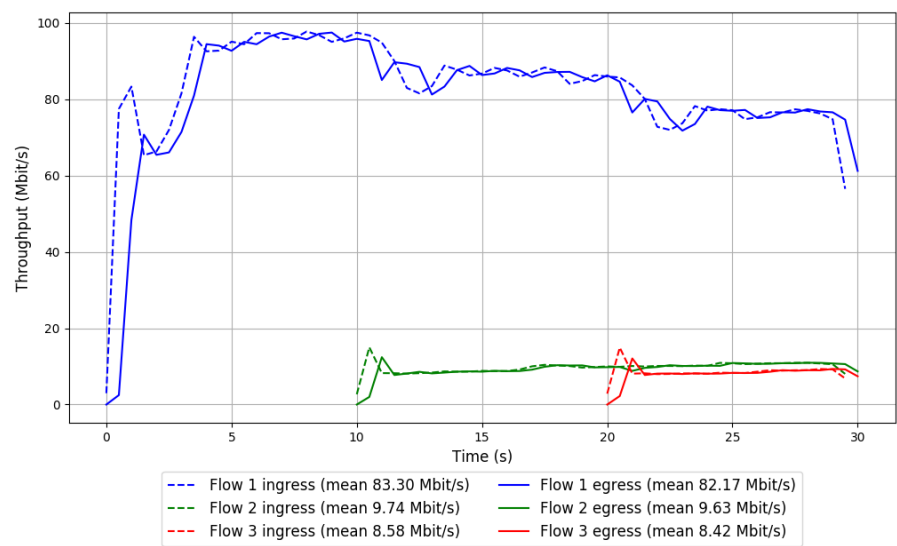
Run 2: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 83.30 Mbit/s)   Flow 1 egress (mean 82.17 Mbit/s)
Flow 2 ingress (mean 9.74 Mbit/s)   Flow 2 egress (mean 9.63 Mbit/s)
Flow 3 ingress (mean 8.58 Mbit/s)   Flow 3 egress (mean 8.42 Mbit/s)

Flow 1 (95th percentile 55.45 ms)   Flow 2 (95th percentile 57.56 ms)   Flow 3 (95th percentile 54.12 ms)
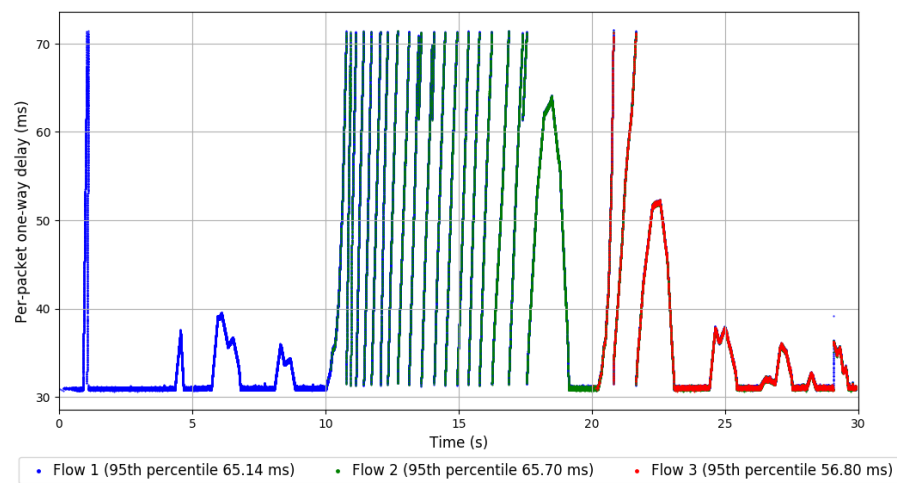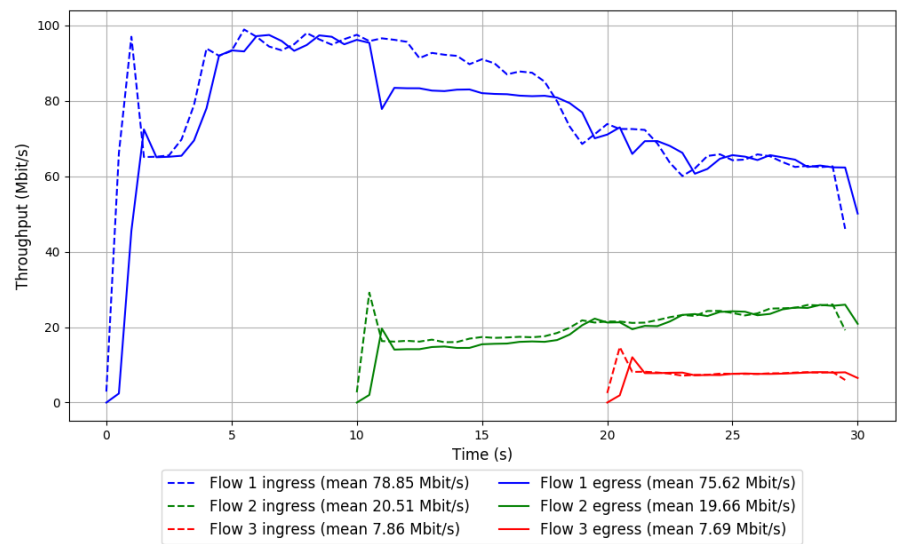
```
Run 3: Statistics of PCC-Allegro

Start at: 2019-01-03 01:06:33
End at: 2019-01-03 01:07:03
Local clock offset: 0.261 ms
Remote clock offset: -2.852 ms


# Below is generated by plot.py at 2019-01-03 02:08:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.23 Mbit/s
95th percentile per-packet one-way delay: 65.115 ms
Loss rate: 4.06%
-- Flow 1:
Average throughput: 75.62 Mbit/s
95th percentile per-packet one-way delay: 65.141 ms
Loss rate: 4.10%
-- Flow 2:
Average throughput: 19.66 Mbit/s
95th percentile per-packet one-way delay: 65.700 ms
Loss rate: 4.16%
-- Flow 3:
Average throughput: 7.69 Mbit/s
95th percentile per-packet one-way delay: 56.805 ms
Loss rate: 2.12%
```
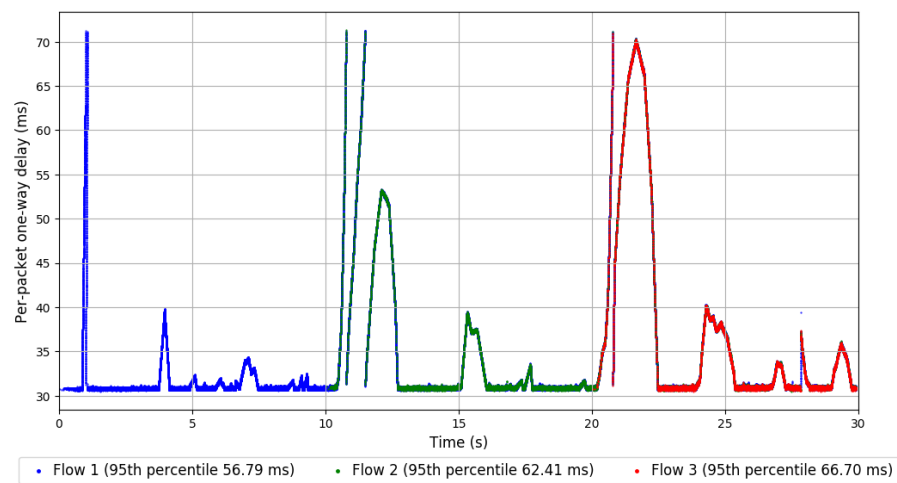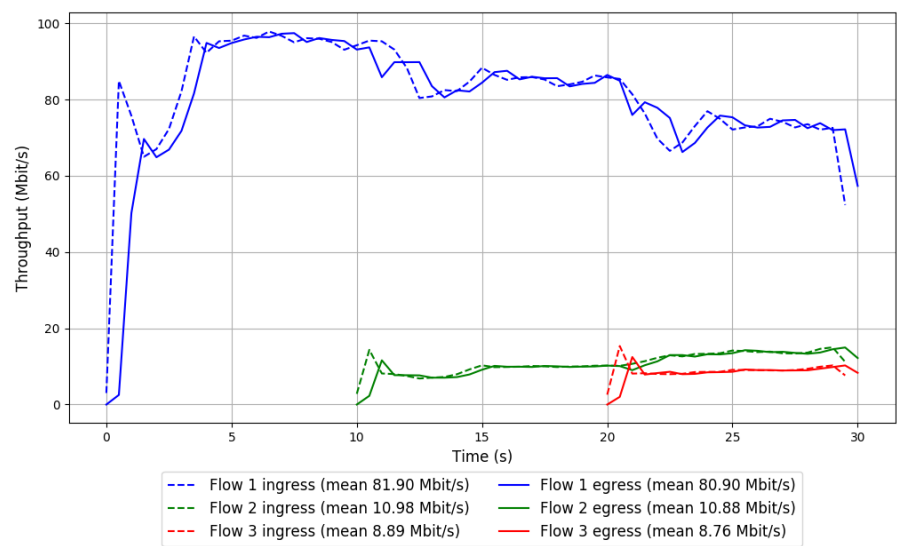
Run 3: Report of PCC-Allegro — Data Link

- - - - Flow 1 ingress (mean 78.85 Mbit/s) — Flow 1 egress (mean 75.62 Mbit/s)
- - - - Flow 2 ingress (mean 20.51 Mbit/s) — Flow 2 egress (mean 19.66 Mbit/s)
- - - - Flow 3 ingress (mean 7.86 Mbit/s) — Flow 3 egress (mean 7.69 Mbit/s)

• Flow 1 (95th percentile 65.14 ms)   • Flow 2 (95th percentile 65.70 ms)   • Flow 3 (95th percentile 56.80 ms)

```
Run 4: Statistics of PCC-Allegro

Start at: 2019-01-03 01:29:30
End at: 2019-01-03 01:30:00
Local clock offset: 0.284 ms
Remote clock offset: -2.825 ms


# Below is generated by plot.py at 2019-01-03 02:08:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.03 Mbit/s
95th percentile per-packet one-way delay: 58.058 ms
Loss rate: 1.20%
-- Flow 1:
Average throughput: 80.90 Mbit/s
95th percentile per-packet one-way delay: 56.792 ms
Loss rate: 1.22%
-- Flow 2:
Average throughput: 10.88 Mbit/s
95th percentile per-packet one-way delay: 62.405 ms
Loss rate: 0.92%
-- Flow 3:
Average throughput: 8.76 Mbit/s
95th percentile per-packet one-way delay: 66.701 ms
Loss rate: 1.49%
```

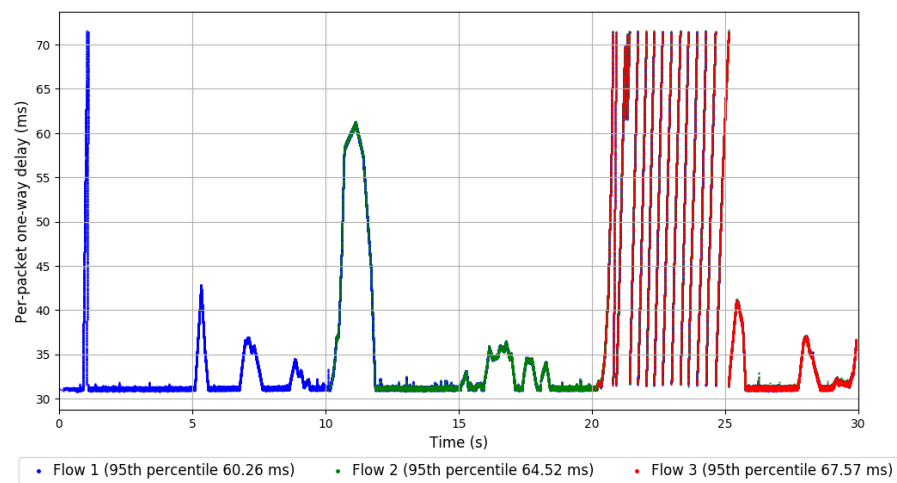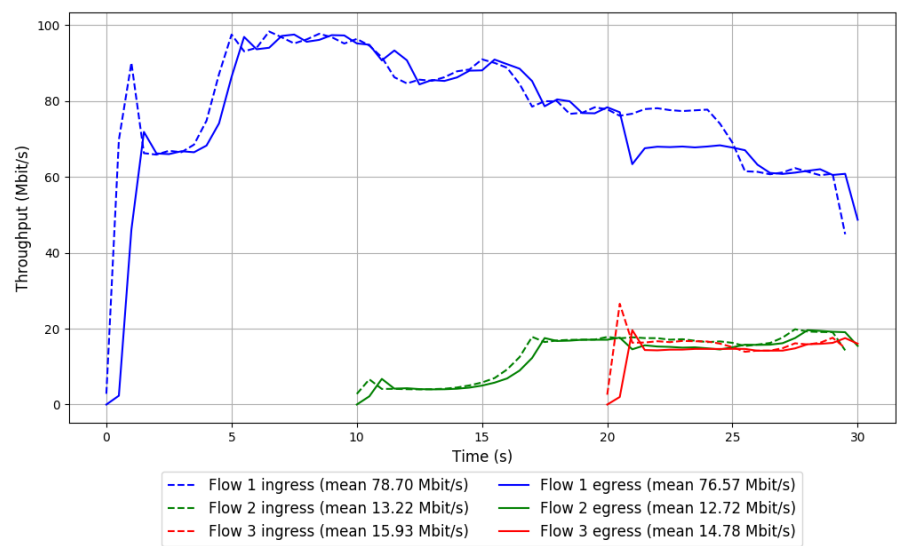Run 4: Report of PCC-Allegro — Data Link

```
Run 5: Statistics of PCC-Allegro

Start at: 2019-01-03 01:52:47
End at: 2019-01-03 01:53:17
Local clock offset: 0.213 ms
Remote clock offset: -2.454 ms

# Below is generated by plot.py at 2019-01-03 02:08:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.90 Mbit/s
95th percentile per-packet one-way delay: 60.978 ms
Loss rate: 3.05%
-- Flow 1:
Average throughput: 76.57 Mbit/s
95th percentile per-packet one-way delay: 60.261 ms
Loss rate: 2.70%
-- Flow 2:
Average throughput: 12.72 Mbit/s
95th percentile per-packet one-way delay: 64.519 ms
Loss rate: 3.76%
-- Flow 3:
Average throughput: 14.78 Mbit/s
95th percentile per-packet one-way delay: 67.571 ms
Loss rate: 7.17%
```
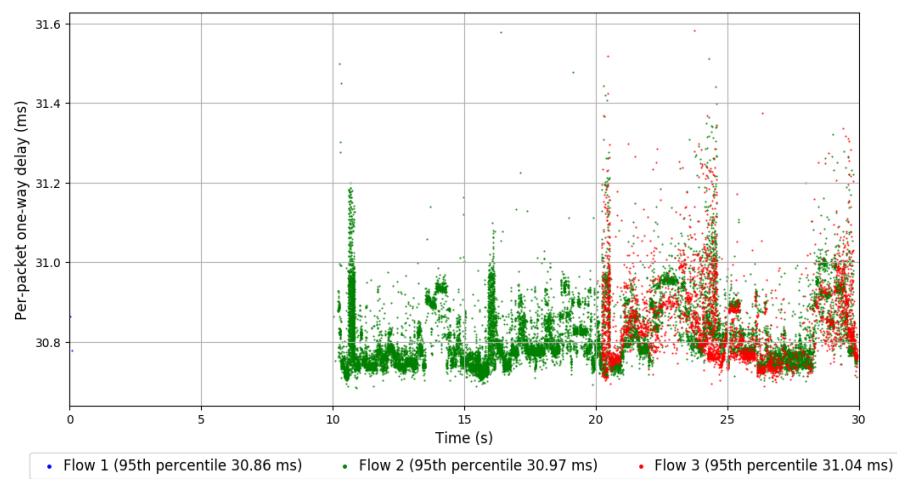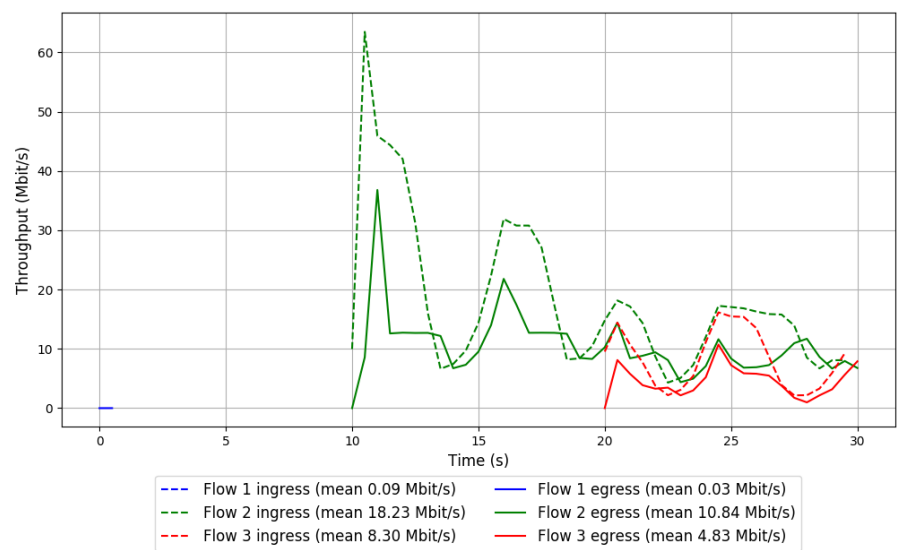
Run 5: Report of PCC-Allegro — Data Link

- - - Flow 1 ingress (mean 78.70 Mbit/s)   —— Flow 1 egress (mean 76.57 Mbit/s)
- - - Flow 2 ingress (mean 13.22 Mbit/s)   —— Flow 2 egress (mean 12.72 Mbit/s)
- - - Flow 3 ingress (mean 15.93 Mbit/s)   —— Flow 3 egress (mean 14.78 Mbit/s)

• Flow 1 (95th percentile 60.26 ms)   • Flow 2 (95th percentile 64.52 ms)   • Flow 3 (95th percentile 67.57 ms)

```
Run 1: Statistics of PCC-Expr

Start at: 2019-01-03 00:05:36
End at: 2019-01-03 00:06:06
Local clock offset: 0.327 ms
Remote clock offset: -3.628 ms


# Below is generated by plot.py at 2019-01-03 02:08:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.80 Mbit/s
95th percentile per-packet one-way delay: 30.986 ms
Loss rate: 40.78%
-- Flow 1:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 30.865 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 10.84 Mbit/s
95th percentile per-packet one-way delay: 30.966 ms
Loss rate: 40.54%
-- Flow 3:
Average throughput: 4.83 Mbit/s
95th percentile per-packet one-way delay: 31.040 ms
Loss rate: 41.83%
```
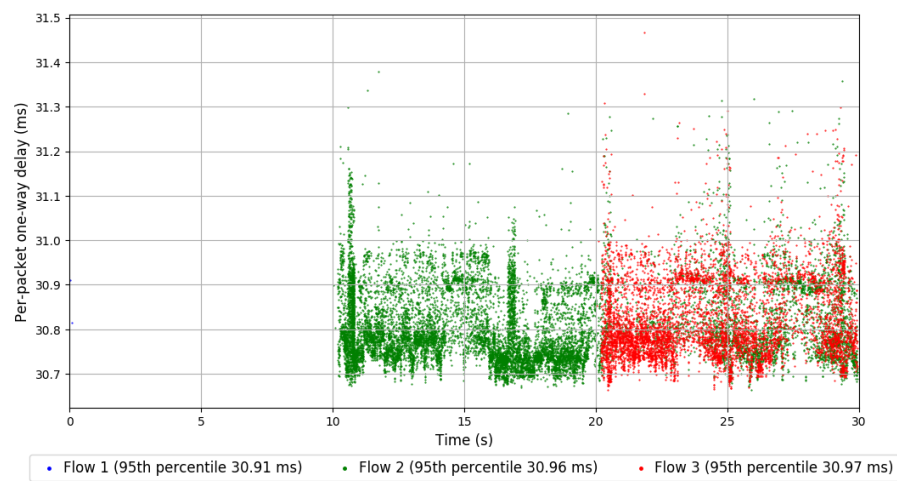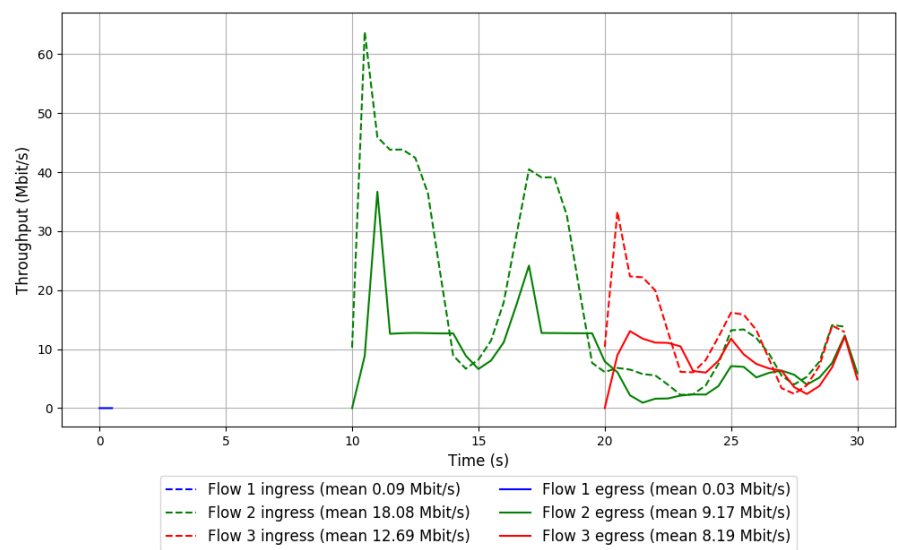
Run 1: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 0.09 Mbit/s) --- Flow 1 egress (mean 0.03 Mbit/s)
Flow 2 ingress (mean 18.23 Mbit/s) --- Flow 2 egress (mean 10.84 Mbit/s)
Flow 3 ingress (mean 8.30 Mbit/s) --- Flow 3 egress (mean 4.83 Mbit/s)

Flow 1 (95th percentile 30.86 ms)   Flow 2 (95th percentile 30.97 ms)   Flow 3 (95th percentile 31.04 ms)

```
Run 2: Statistics of PCC-Expr

Start at: 2019-01-03 00:28:58
End at: 2019-01-03 00:29:28
Local clock offset: 0.262 ms
Remote clock offset: -3.367 ms


# Below is generated by plot.py at 2019-01-03 02:08:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.81 Mbit/s
95th percentile per-packet one-way delay: 30.966 ms
Loss rate: 45.73%
-- Flow 1:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 30.911 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 9.17 Mbit/s
95th percentile per-packet one-way delay: 30.963 ms
Loss rate: 49.30%
-- Flow 3:
Average throughput: 8.19 Mbit/s
95th percentile per-packet one-way delay: 30.971 ms
Loss rate: 35.48%
```
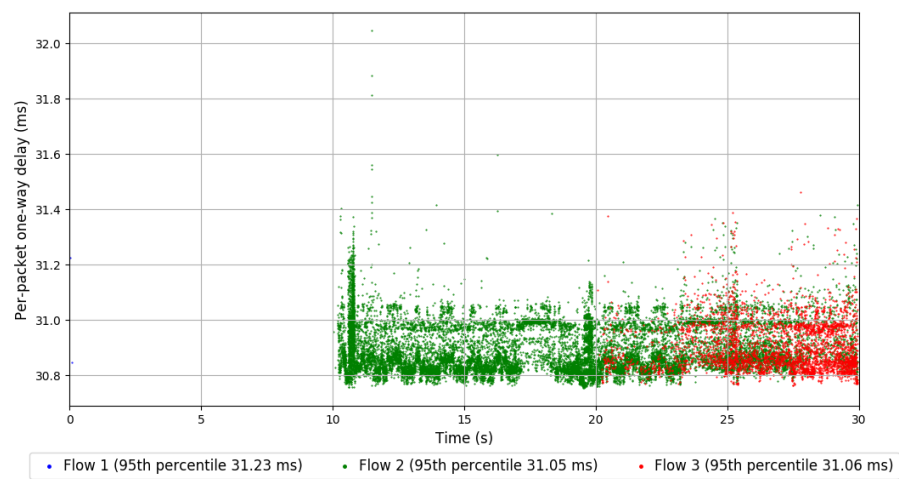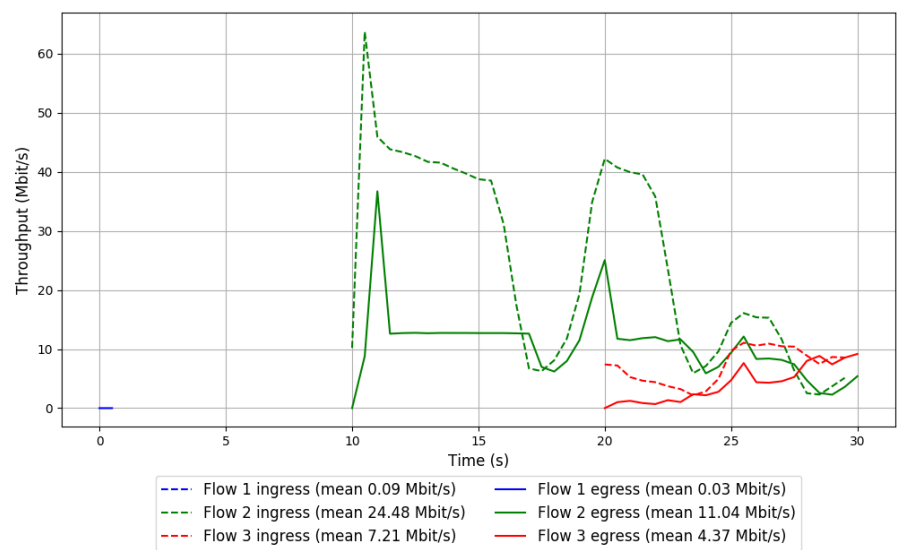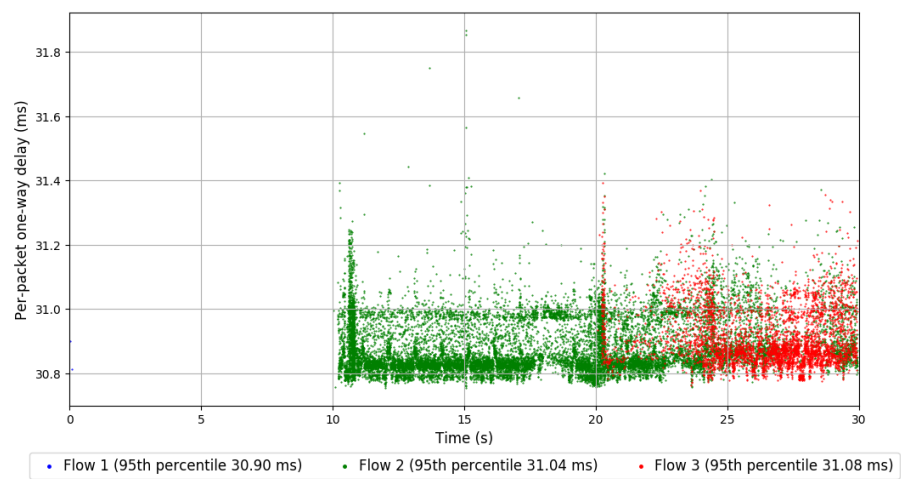
Run 2: Report of PCC-Expr — Data Link

- - - Flow 1 ingress (mean 0.09 Mbit/s) ——— Flow 1 egress (mean 0.03 Mbit/s)
- - - Flow 2 ingress (mean 18.08 Mbit/s) ——— Flow 2 egress (mean 9.17 Mbit/s)
- - - Flow 3 ingress (mean 12.69 Mbit/s) ——— Flow 3 egress (mean 8.19 Mbit/s)

- Flow 1 (95th percentile 30.91 ms) • Flow 2 (95th percentile 30.96 ms) • Flow 3 (95th percentile 30.97 ms)

```
Run 3: Statistics of PCC-Expr

Start at: 2019-01-03 00:52:03
End at: 2019-01-03 00:52:33
Local clock offset: 0.179 ms
Remote clock offset: -3.029 ms


# Below is generated by plot.py at 2019-01-03 02:08:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.79 Mbit/s
95th percentile per-packet one-way delay: 31.048 ms
Loss rate: 52.95%
-- Flow 1:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 31.225 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 11.04 Mbit/s
95th percentile per-packet one-way delay: 31.048 ms
Loss rate: 54.92%
-- Flow 3:
Average throughput: 4.37 Mbit/s
95th percentile per-packet one-way delay: 31.057 ms
Loss rate: 39.44%
```
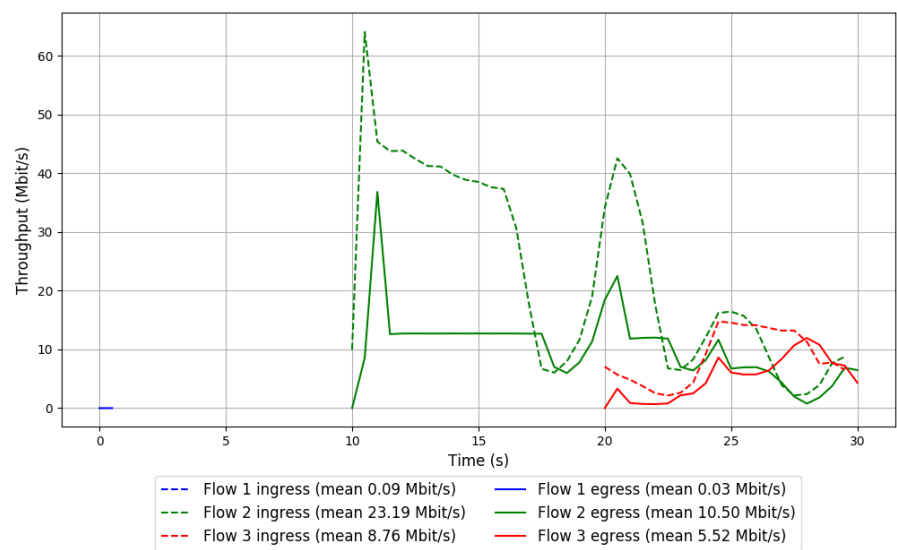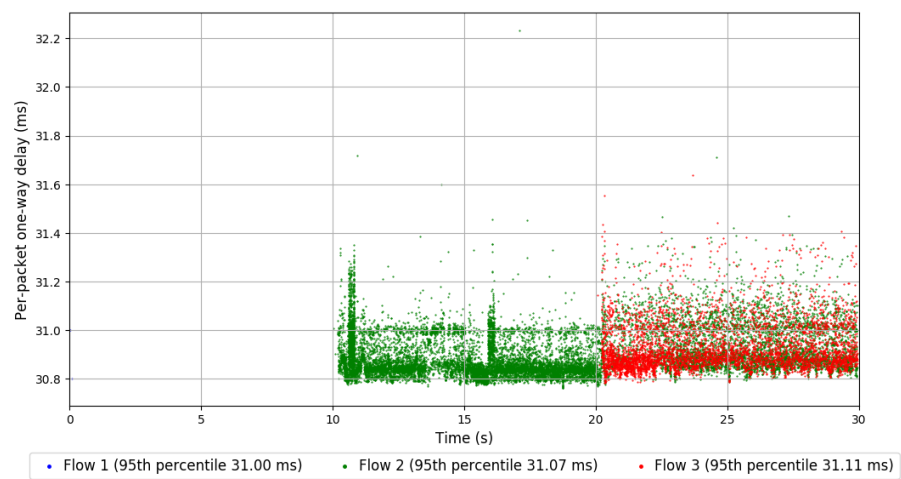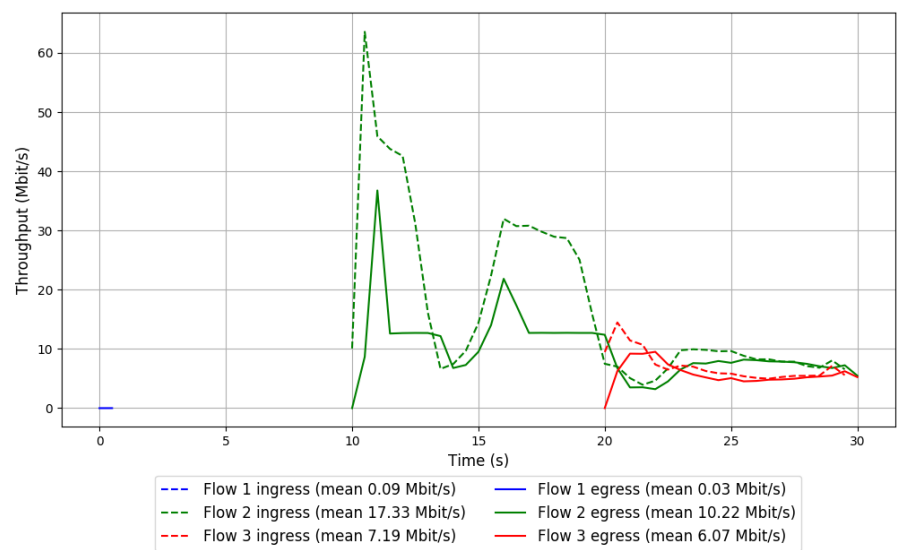
Run 3: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 0.09 Mbit/s)   Flow 1 egress (mean 0.03 Mbit/s)
Flow 2 ingress (mean 24.48 Mbit/s)   Flow 2 egress (mean 11.04 Mbit/s)
Flow 3 ingress (mean 7.21 Mbit/s)   Flow 3 egress (mean 4.37 Mbit/s)

Flow 1 (95th percentile 31.23 ms)   Flow 2 (95th percentile 31.05 ms)   Flow 3 (95th percentile 31.06 ms)

```
Run 4: Statistics of PCC-Expr

Start at: 2019-01-03 01:14:59
End at: 2019-01-03 01:15:29
Local clock offset: 0.319 ms
Remote clock offset: -2.787 ms


# Below is generated by plot.py at 2019-01-03 02:08:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.80 Mbit/s
95th percentile per-packet one-way delay: 31.052 ms
Loss rate: 51.95%
-- Flow 1:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 30.901 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 10.50 Mbit/s
95th percentile per-packet one-way delay: 31.040 ms
Loss rate: 54.74%
-- Flow 3:
Average throughput: 5.52 Mbit/s
95th percentile per-packet one-way delay: 31.080 ms
Loss rate: 37.03%
```

Run 4: Report of PCC-Expr — Data Link

```
Run 5: Statistics of PCC-Expr

Start at: 2019-01-03 01:38:03
End at: 2019-01-03 01:38:33
Local clock offset: 0.228 ms
Remote clock offset: -2.564 ms


# Below is generated by plot.py at 2019-01-03 02:08:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.80 Mbit/s
95th percentile per-packet one-way delay: 31.082 ms
Loss rate: 36.67%
-- Flow 1:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 31.001 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 10.22 Mbit/s
95th percentile per-packet one-way delay: 31.073 ms
Loss rate: 41.02%
-- Flow 3:
Average throughput: 6.07 Mbit/s
95th percentile per-packet one-way delay: 31.111 ms
Loss rate: 15.57%
```
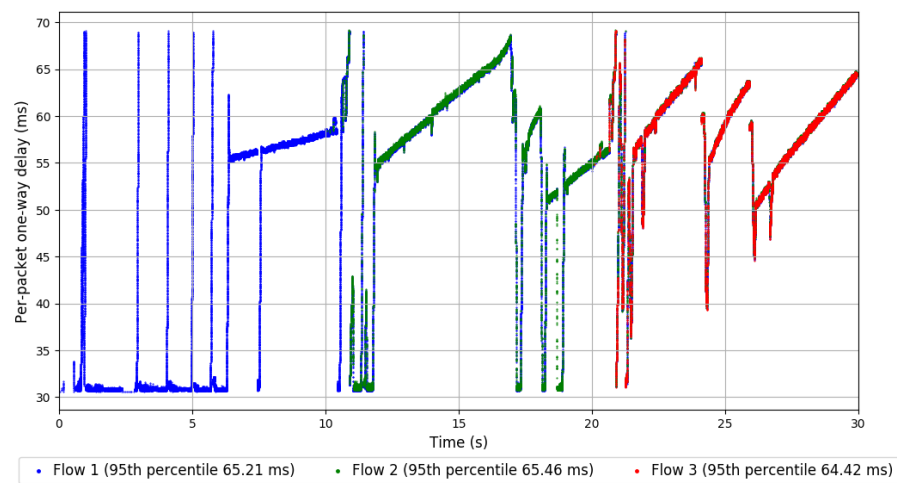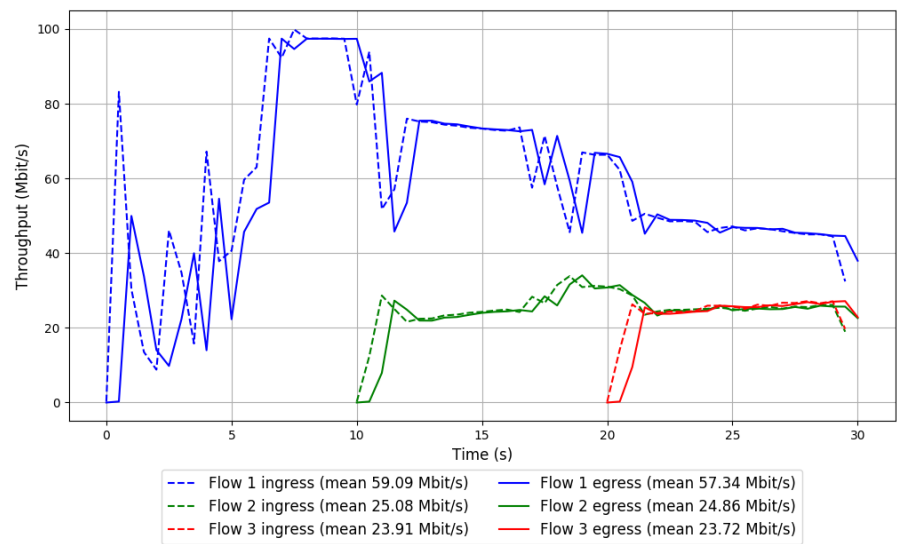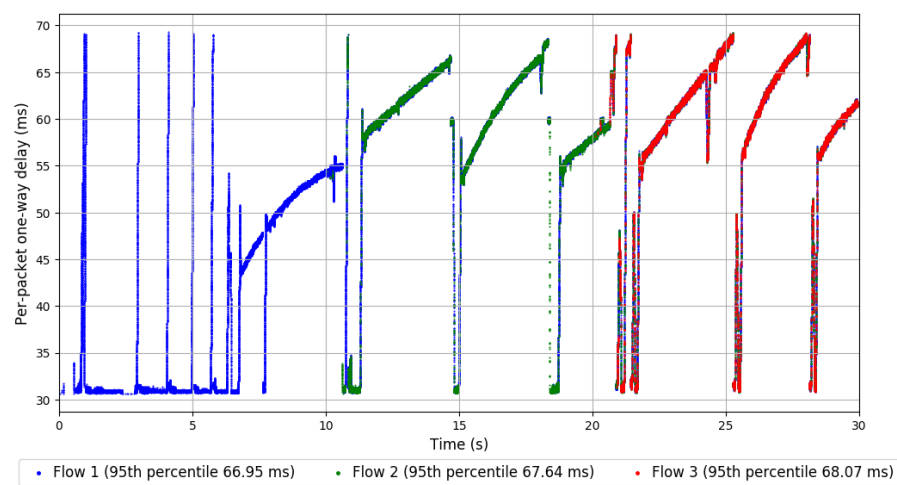
Run 5: Report of PCC-Expr — Data Link

```
Run 1: Statistics of QUIC Cubic

Start at: 2019-01-03 00:24:13
End at: 2019-01-03 00:24:43
Local clock offset: 0.396 ms
Remote clock offset: -3.4 ms


# Below is generated by plot.py at 2019-01-03 02:08:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 81.64 Mbit/s
95th percentile per-packet one-way delay: 65.202 ms
Loss rate: 2.26%
-- Flow 1:
Average throughput: 57.34 Mbit/s
95th percentile per-packet one-way delay: 65.206 ms
Loss rate: 2.86%
-- Flow 2:
Average throughput: 24.86 Mbit/s
95th percentile per-packet one-way delay: 65.461 ms
Loss rate: 0.86%
-- Flow 3:
Average throughput: 23.72 Mbit/s
95th percentile per-packet one-way delay: 64.421 ms
Loss rate: 0.72%
```

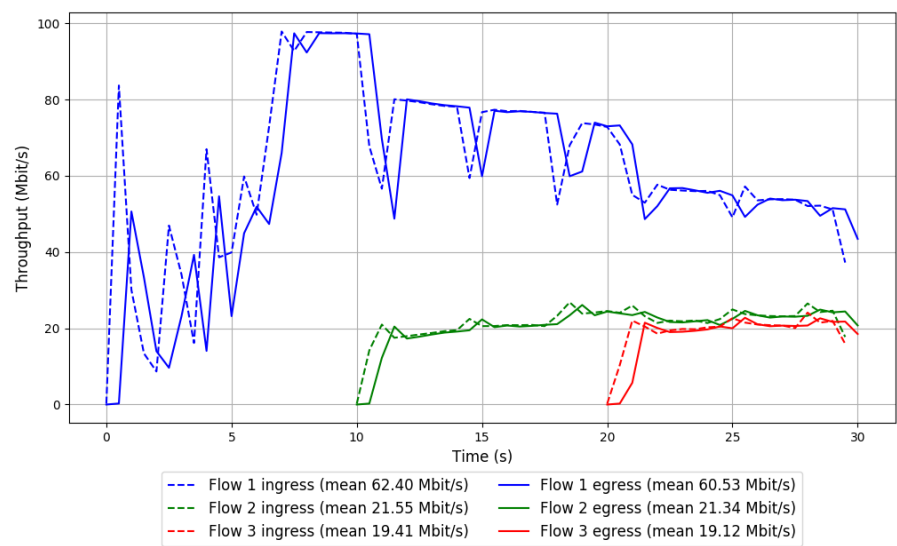Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2019-01-03 00:47:20
End at: 2019-01-03 00:47:50
Local clock offset: 0.165 ms
Remote clock offset: -3.015 ms


# Below is generated by plot.py at 2019-01-03 02:08:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 80.99 Mbit/s
95th percentile per-packet one-way delay: 67.268 ms
Loss rate: 2.45%
-- Flow 1:
Average throughput: 60.53 Mbit/s
95th percentile per-packet one-way delay: 66.947 ms
Loss rate: 2.90%
-- Flow 2:
Average throughput: 21.34 Mbit/s
95th percentile per-packet one-way delay: 67.644 ms
Loss rate: 0.94%
-- Flow 3:
Average throughput: 19.12 Mbit/s
95th percentile per-packet one-way delay: 68.072 ms
Loss rate: 1.42%
```

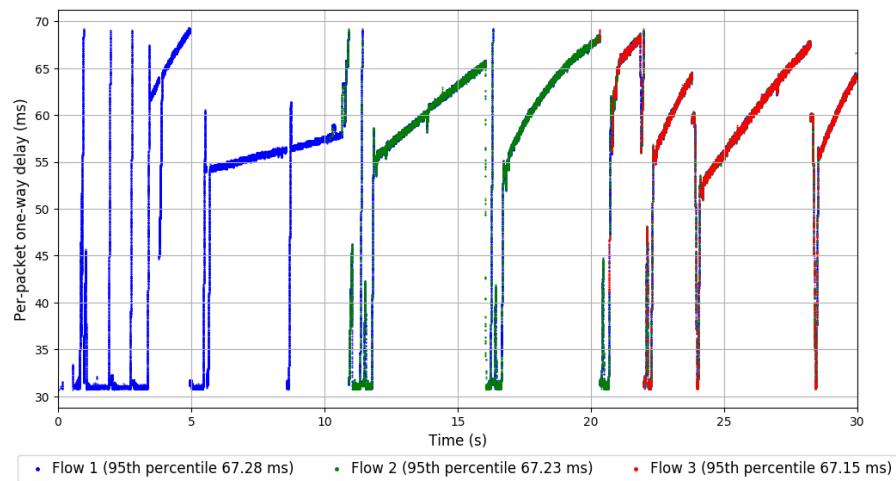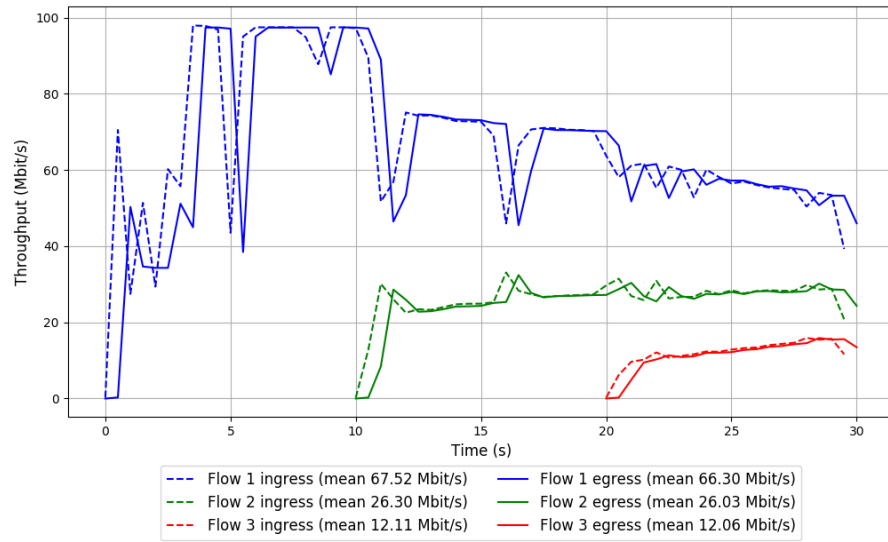Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2019-01-03 01:10:15
End at: 2019-01-03 01:10:45
Local clock offset: 0.274 ms
Remote clock offset: -2.781 ms


# Below is generated by plot.py at 2019-01-03 02:08:47
# Datalink statistics
-- Total of 3 flows:
Average throughput: 87.53 Mbit/s
95th percentile per-packet one-way delay: 67.264 ms
Loss rate: 1.50%
-- Flow 1:
Average throughput: 66.30 Mbit/s
95th percentile per-packet one-way delay: 67.282 ms
Loss rate: 1.70%
-- Flow 2:
Average throughput: 26.03 Mbit/s
95th percentile per-packet one-way delay: 67.229 ms
Loss rate: 0.98%
-- Flow 3:
Average throughput: 12.06 Mbit/s
95th percentile per-packet one-way delay: 67.149 ms
Loss rate: 0.46%
```

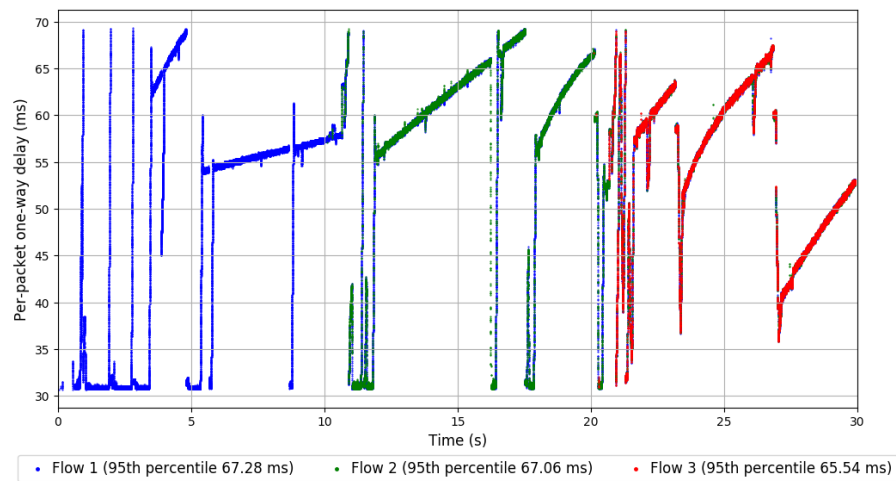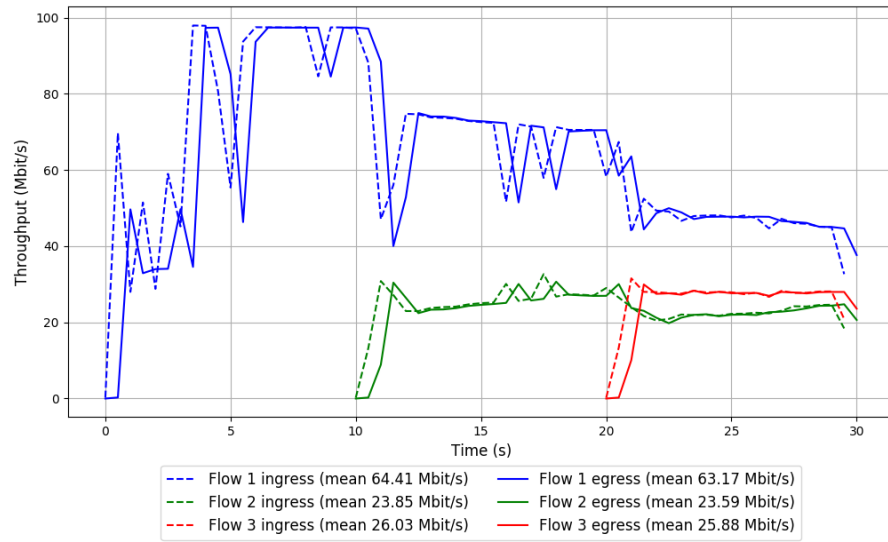Run 3: Report of QUIC Cubic — Data Link

```
Run 4: Statistics of QUIC Cubic

Start at: 2019-01-03 01:33:06
End at: 2019-01-03 01:33:36
Local clock offset: 0.258 ms
Remote clock offset: -2.537 ms


# Below is generated by plot.py at 2019-01-03 02:09:16
# Datalink statistics
-- Total of 3 flows:
Average throughput: 87.32 Mbit/s
95th percentile per-packet one-way delay: 67.012 ms
Loss rate: 1.61%
-- Flow 1:
Average throughput: 63.17 Mbit/s
95th percentile per-packet one-way delay: 67.276 ms
Loss rate: 1.85%
-- Flow 2:
Average throughput: 23.59 Mbit/s
95th percentile per-packet one-way delay: 67.059 ms
Loss rate: 1.09%
-- Flow 3:
Average throughput: 25.88 Mbit/s
95th percentile per-packet one-way delay: 65.543 ms
Loss rate: 0.71%
```

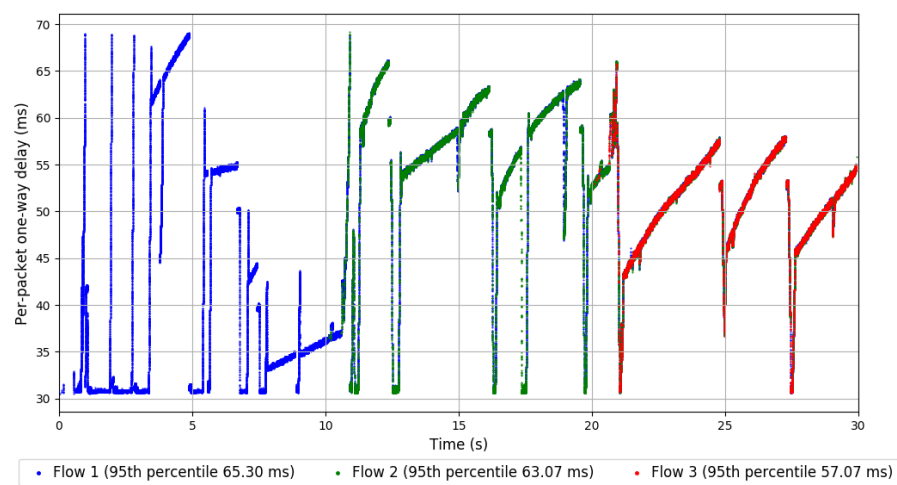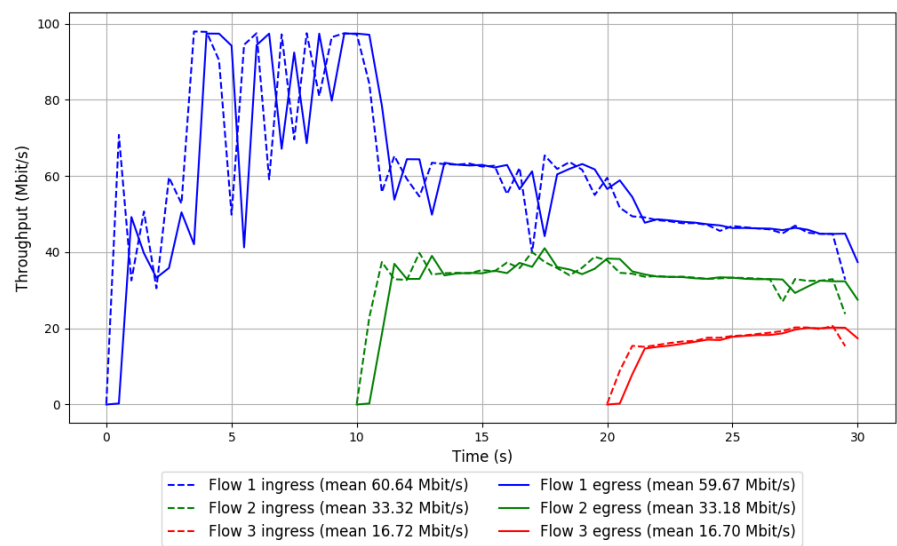Run 4: Report of QUIC Cubic — Data Link

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```
Run 5: Statistics of QUIC Cubic

Start at: 2019-01-03 01:56:28
End at: 2019-01-03 01:56:58
Local clock offset: 0.204 ms
Remote clock offset: -2.705 ms


# Below is generated by plot.py at 2019-01-03 02:09:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 87.23 Mbit/s
95th percentile per-packet one-way delay: 64.333 ms
Loss rate: 1.13%
-- Flow 1:
Average throughput: 59.67 Mbit/s
95th percentile per-packet one-way delay: 65.302 ms
Loss rate: 1.51%
-- Flow 2:
Average throughput: 33.18 Mbit/s
95th percentile per-packet one-way delay: 63.067 ms
Loss rate: 0.34%
-- Flow 3:
Average throughput: 16.70 Mbit/s
95th percentile per-packet one-way delay: 57.071 ms
Loss rate: 0.16%
```

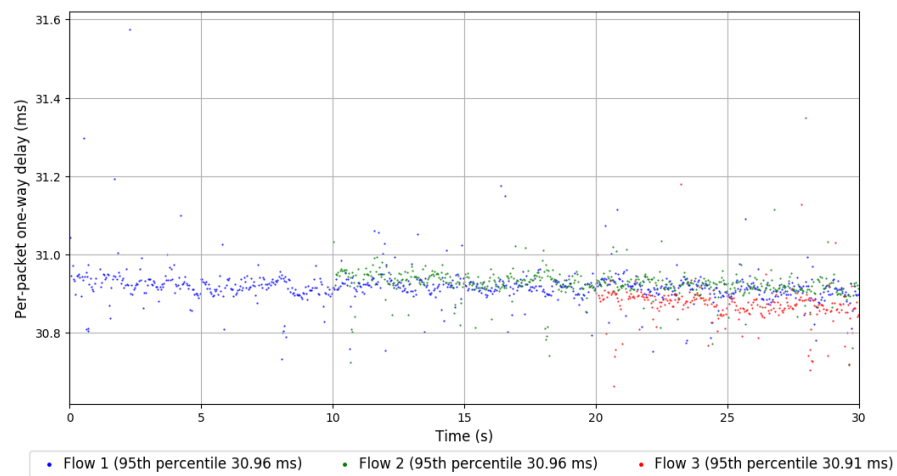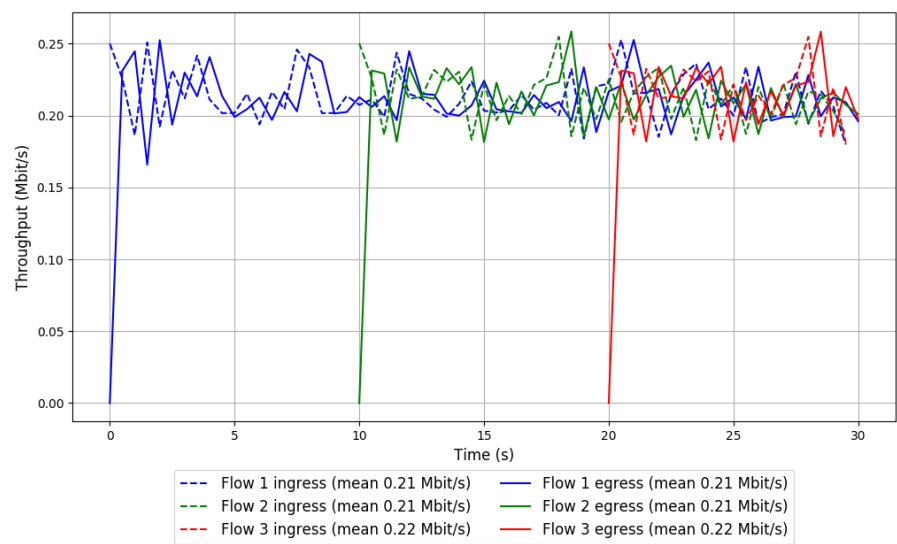Run 5: Report of QUIC Cubic — Data Link

```
Run 1: Statistics of SCReAM

Start at: 2019-01-03 00:25:27
End at: 2019-01-03 00:25:57
Local clock offset: 0.367 ms
Remote clock offset: -3.412 ms


# Below is generated by plot.py at 2019-01-03 02:09:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 30.961 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.962 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.964 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 30.908 ms
Loss rate: 0.00%
```
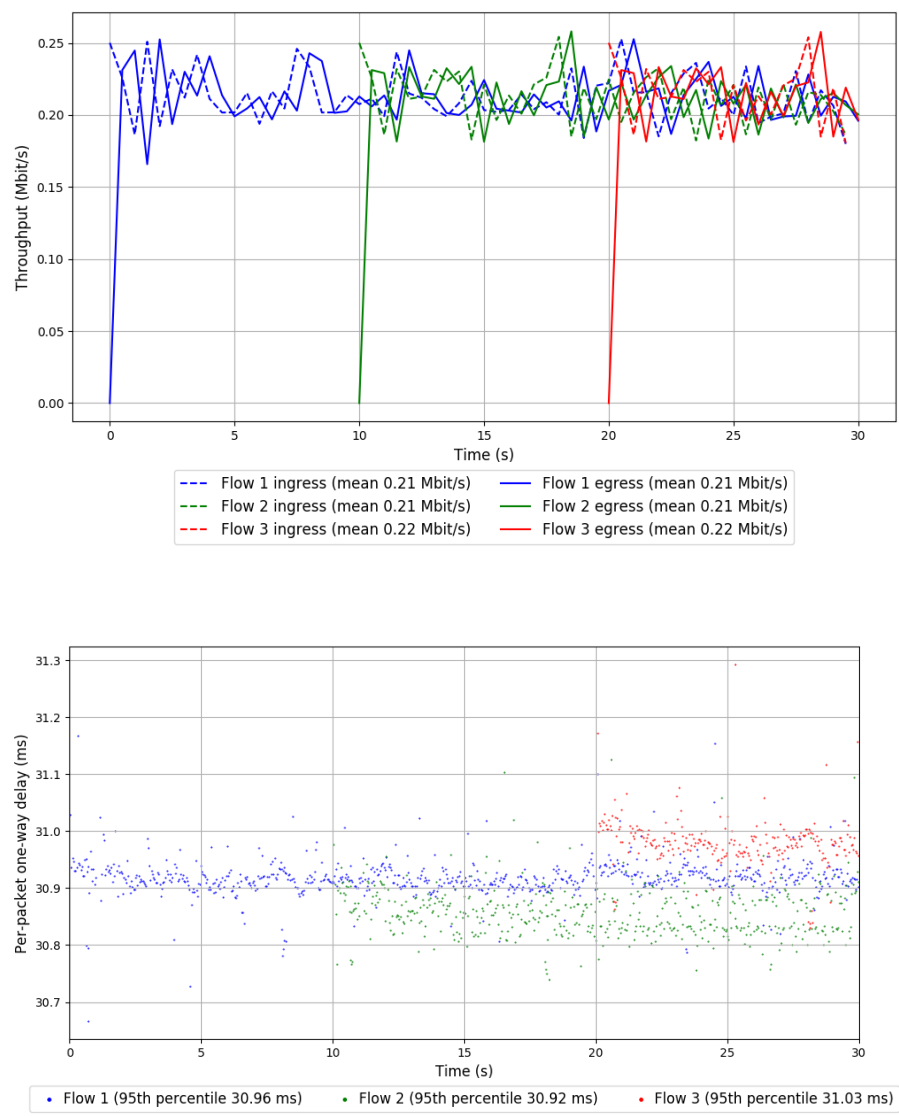
Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2019-01-03 00:48:33
End at: 2019-01-03 00:49:03
Local clock offset: 0.162 ms
Remote clock offset: -3.08 ms


# Below is generated by plot.py at 2019-01-03 02:09:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 30.998 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.961 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.923 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 31.026 ms
Loss rate: 0.00%
```
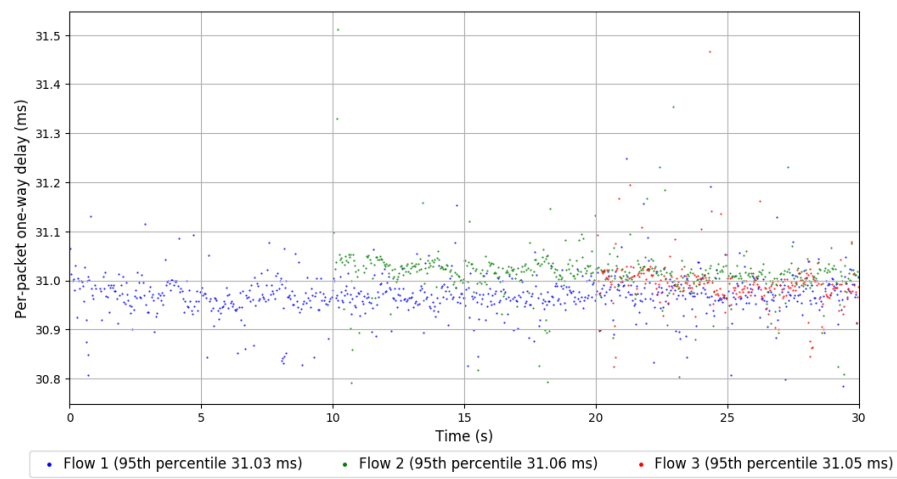
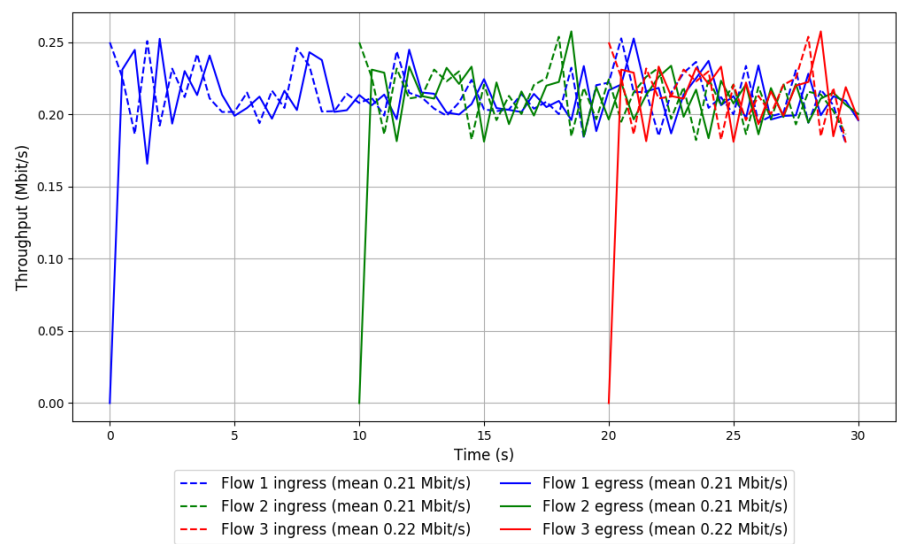## Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2019-01-03 01:11:29
End at: 2019-01-03 01:11:59
Local clock offset: 0.277 ms
Remote clock offset: -2.808 ms


# Below is generated by plot.py at 2019-01-03 02:09:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 31.049 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 31.027 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 31.059 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 31.049 ms
Loss rate: 0.00%
```

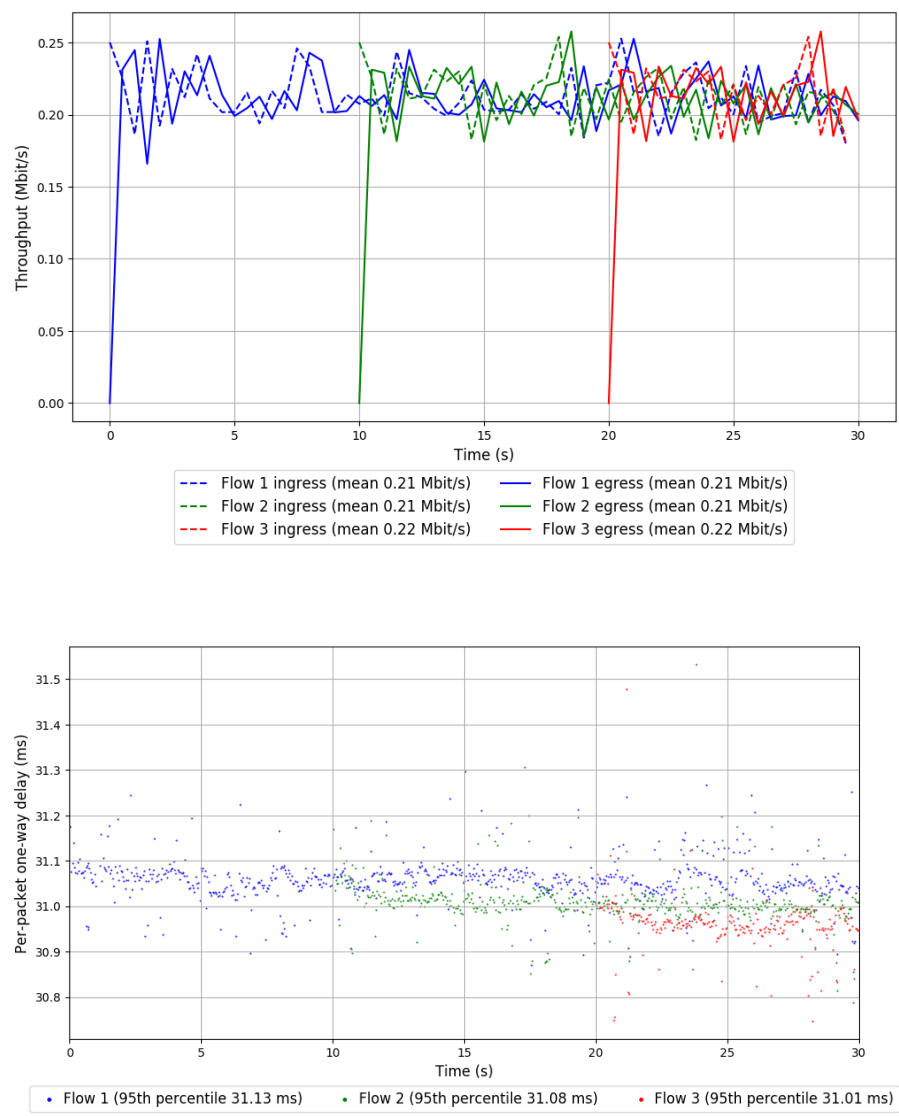## Run 3: Report of SCReAM — Data Link

```
Run 4: Statistics of SCReAM

Start at: 2019-01-03 01:34:26
End at: 2019-01-03 01:34:56
Local clock offset: 0.235 ms
Remote clock offset: -2.573 ms


# Below is generated by plot.py at 2019-01-03 02:09:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 31.119 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 31.133 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 31.083 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 31.009 ms
Loss rate: 0.00%
```

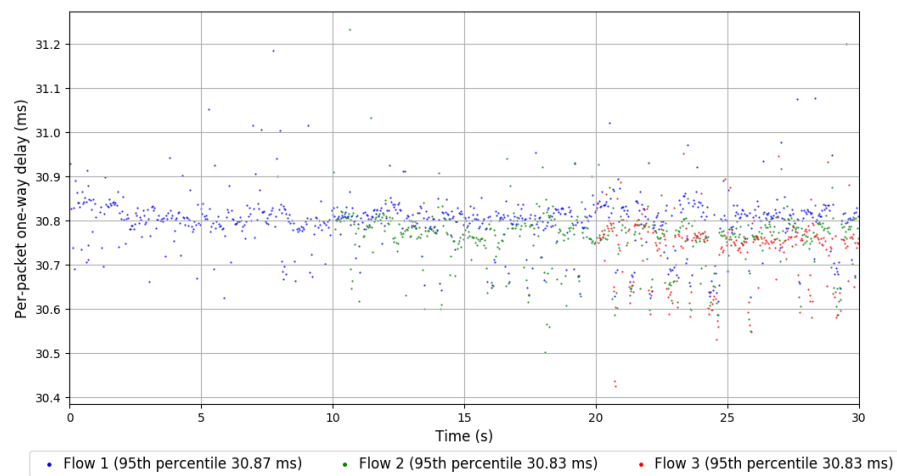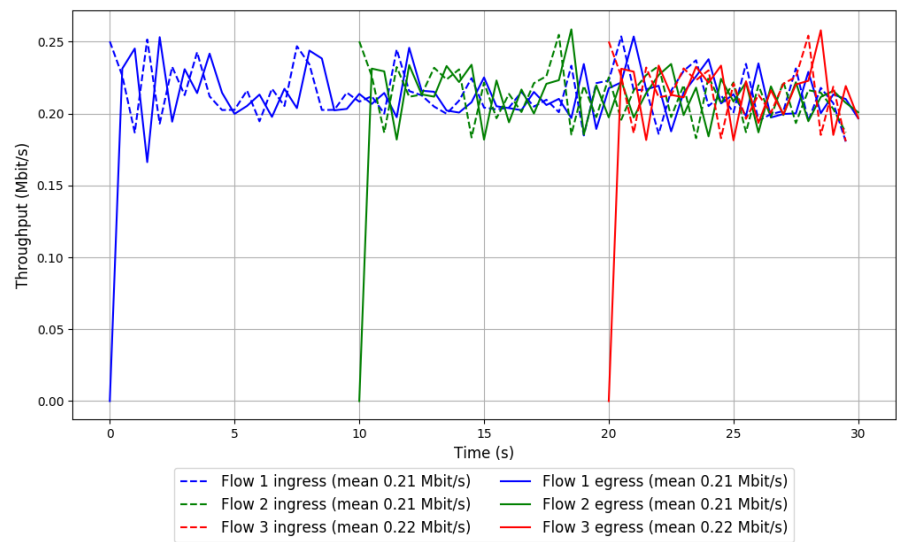# Run 4: Report of SCReAM — Data Link

```
Run 5: Statistics of SCReAM

Start at: 2019-01-03 01:57:43
End at: 2019-01-03 01:58:13
Local clock offset: 0.21 ms
Remote clock offset: -2.713 ms


# Below is generated by plot.py at 2019-01-03 02:09:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 30.853 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.870 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 30.830 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 30.828 ms
Loss rate: 0.00%
```

Run 5: Report of SCReAM — Data Link

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```
Run 1: Statistics of Sprout

Start at: 2019-01-03 00:21:48
End at: 2019-01-03 00:22:18
Local clock offset: 0.378 ms
Remote clock offset: -3.46 ms

# Below is generated by plot.py at 2019-01-03 02:09:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 23.34 Mbit/s
95th percentile per-packet one-way delay: 37.620 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 11.80 Mbit/s
95th percentile per-packet one-way delay: 37.302 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 11.66 Mbit/s
95th percentile per-packet one-way delay: 37.830 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 11.46 Mbit/s
95th percentile per-packet one-way delay: 37.973 ms
Loss rate: 0.14%
```
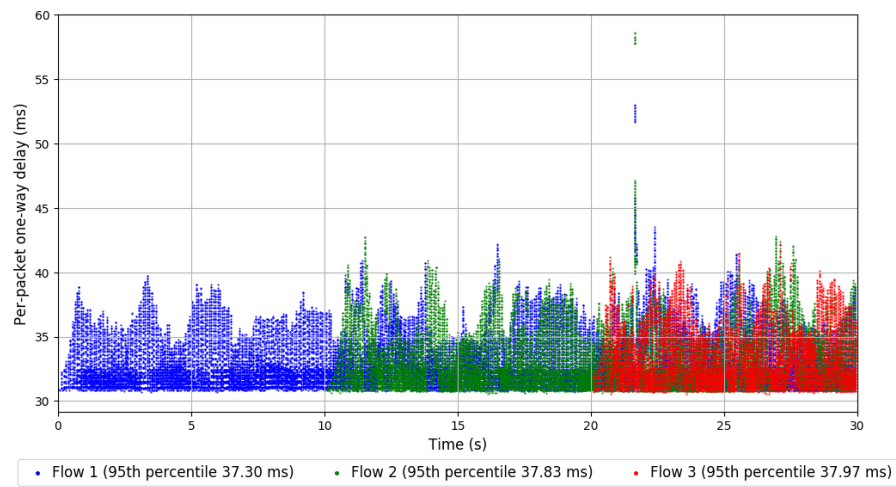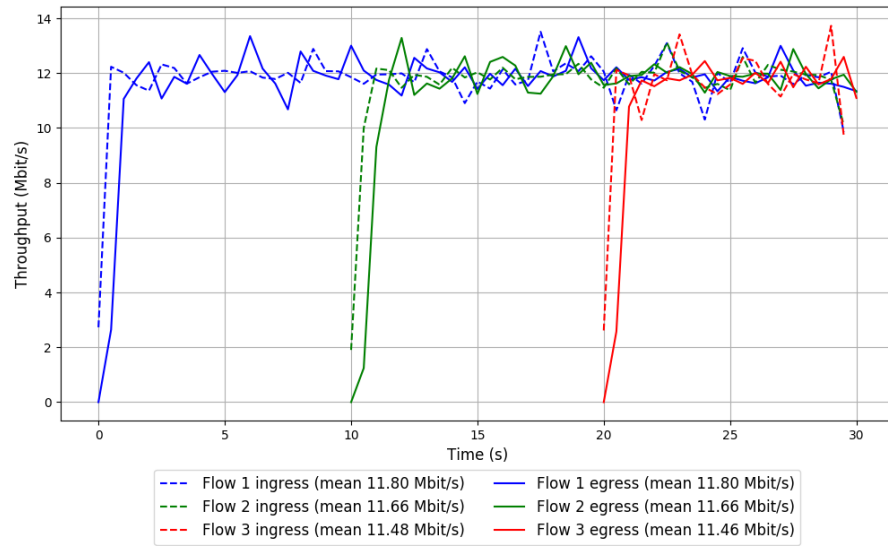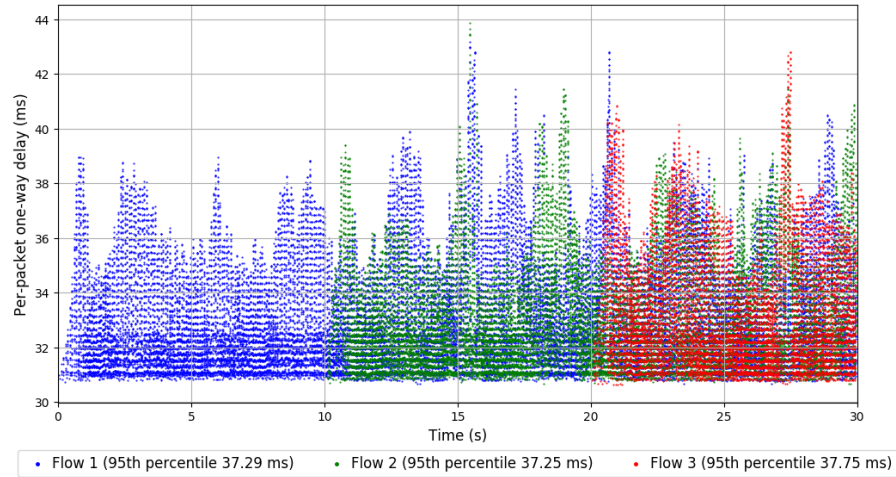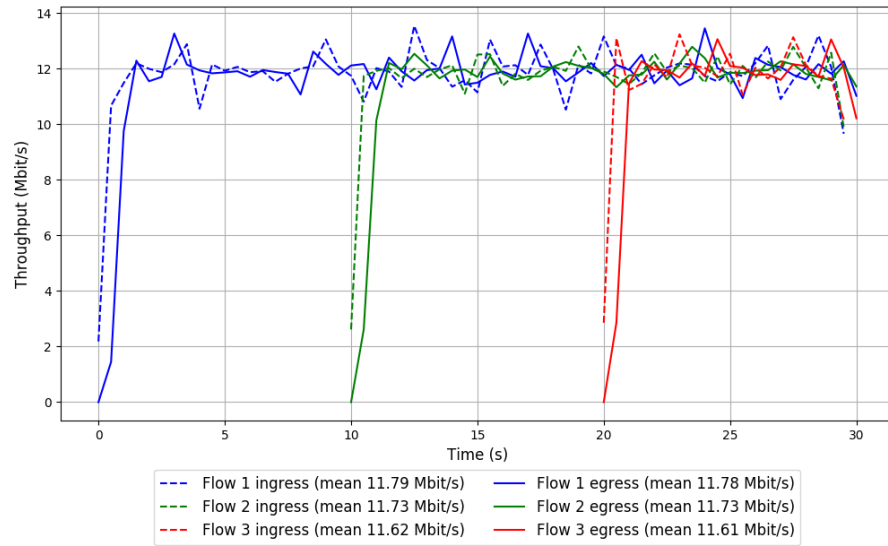
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2019-01-03 00:44:57
End at: 2019-01-03 00:45:27
Local clock offset: 0.151 ms
Remote clock offset: -3.116 ms


# Below is generated by plot.py at 2019-01-03 02:09:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 23.42 Mbit/s
95th percentile per-packet one-way delay: 37.326 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 11.78 Mbit/s
95th percentile per-packet one-way delay: 37.288 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 11.73 Mbit/s
95th percentile per-packet one-way delay: 37.247 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 11.61 Mbit/s
95th percentile per-packet one-way delay: 37.747 ms
Loss rate: 0.00%
```

Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2019-01-03 01:07:47
End at: 2019-01-03 01:08:17
Local clock offset: 0.254 ms
Remote clock offset: -2.81 ms


# Below is generated by plot.py at 2019-01-03 02:09:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 23.46 Mbit/s
95th percentile per-packet one-way delay: 37.986 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 11.83 Mbit/s
95th percentile per-packet one-way delay: 37.617 ms
Loss rate: 0.07%
-- Flow 2:
Average throughput: 11.71 Mbit/s
95th percentile per-packet one-way delay: 38.223 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 11.64 Mbit/s
95th percentile per-packet one-way delay: 38.471 ms
Loss rate: 0.00%
```
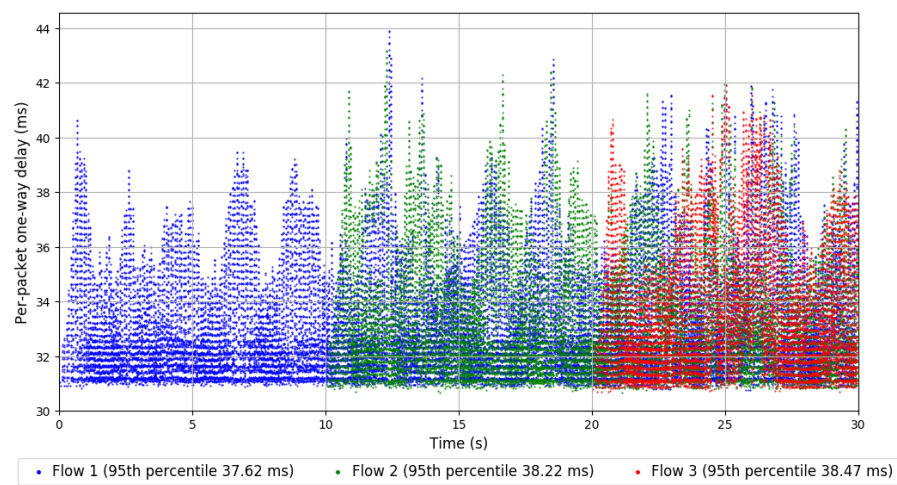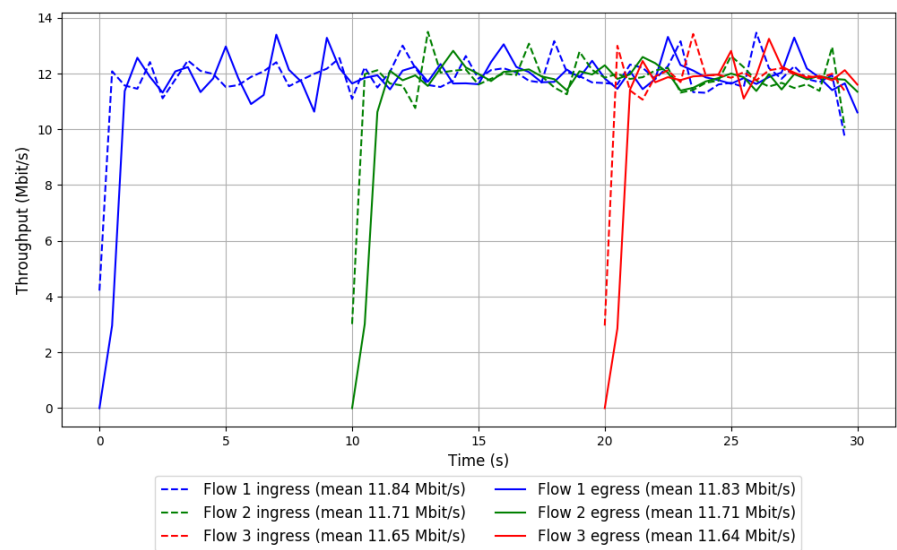
Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2019-01-03 01:30:42
End at: 2019-01-03 01:31:12
Local clock offset: 0.261 ms
Remote clock offset: -2.593 ms


# Below is generated by plot.py at 2019-01-03 02:09:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 23.42 Mbit/s
95th percentile per-packet one-way delay: 37.384 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.79 Mbit/s
95th percentile per-packet one-way delay: 36.955 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 11.78 Mbit/s
95th percentile per-packet one-way delay: 37.306 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 11.52 Mbit/s
95th percentile per-packet one-way delay: 38.532 ms
Loss rate: 0.00%
```
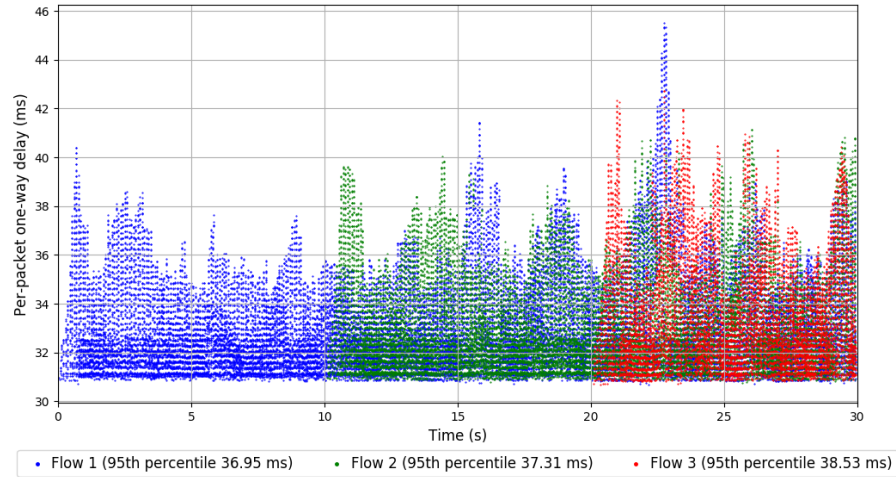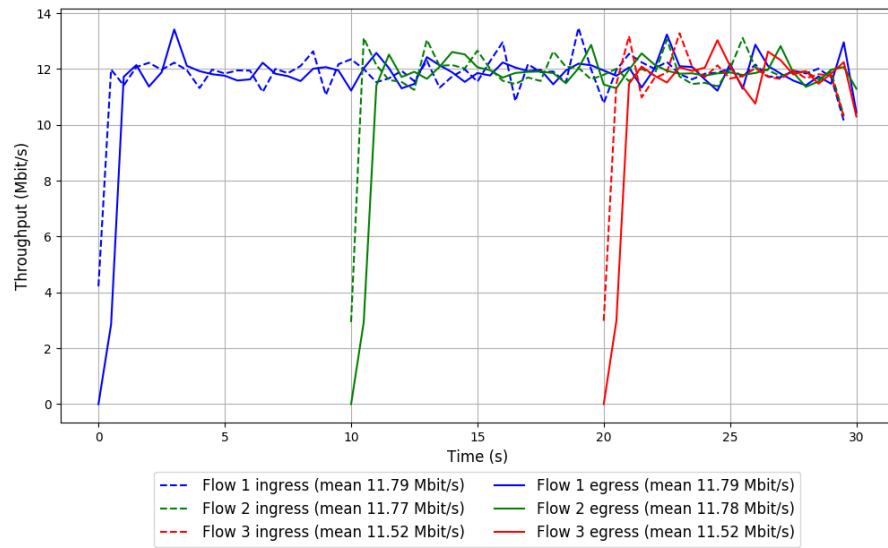
Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2019-01-03 01:53:59
End at: 2019-01-03 01:54:29
Local clock offset: 0.206 ms
Remote clock offset: -2.665 ms


# Below is generated by plot.py at 2019-01-03 02:09:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 23.45 Mbit/s
95th percentile per-packet one-way delay: 38.037 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.84 Mbit/s
95th percentile per-packet one-way delay: 37.297 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 11.72 Mbit/s
95th percentile per-packet one-way delay: 39.060 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 11.55 Mbit/s
95th percentile per-packet one-way delay: 38.055 ms
Loss rate: 0.00%
```
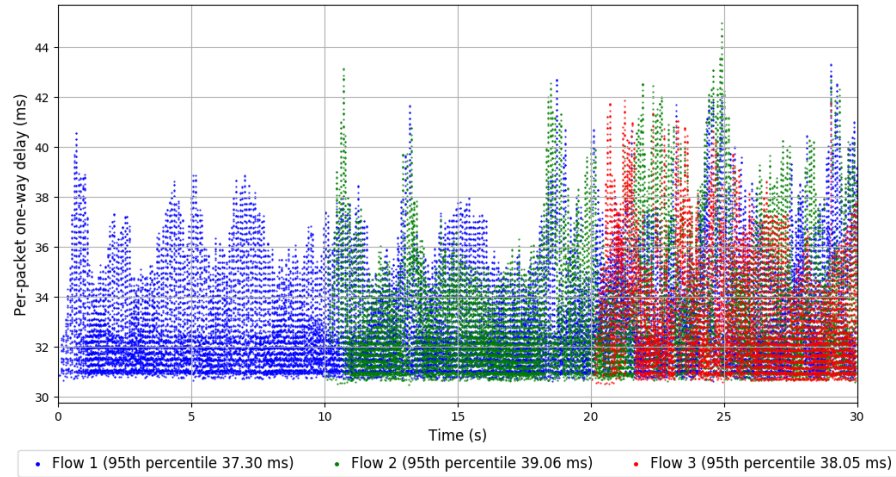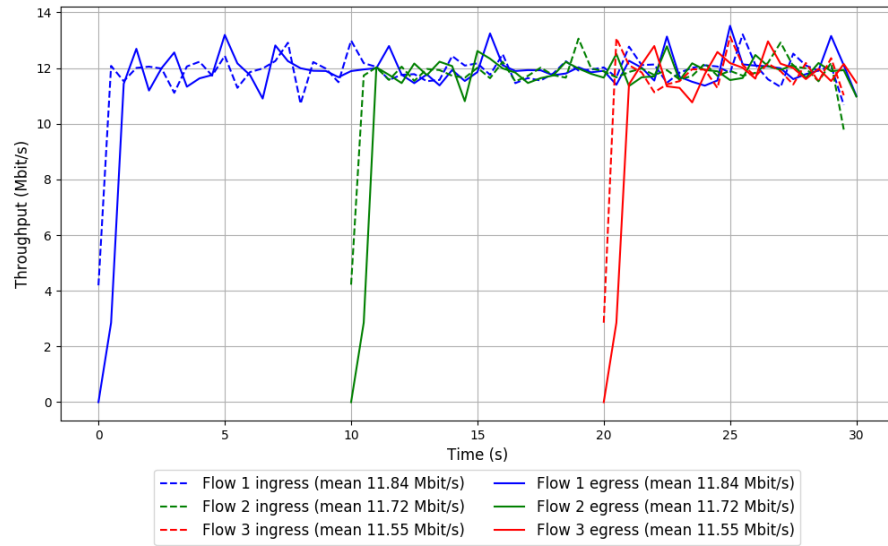
Run 5: Report of Sprout — Data Link

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

Start at: 2019-01-03 00:13:13
End at: 2019-01-03 00:13:43
Local clock offset: 0.32 ms
Remote clock offset: -3.546 ms

# Below is generated by plot.py at 2019-01-03 02:09:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.68 Mbit/s
95th percentile per-packet one-way delay: 31.161 ms
Loss rate: 89.63%
-- Flow 1:
Average throughput: 8.93 Mbit/s
95th percentile per-packet one-way delay: 32.334 ms
Loss rate: 77.94%
-- Flow 2:
Average throughput: 3.71 Mbit/s
95th percentile per-packet one-way delay: 32.316 ms
Loss rate: 63.30%
-- Flow 3:
Average throughput: 11.87 Mbit/s
95th percentile per-packet one-way delay: 30.956 ms
Loss rate: 95.47%
```

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

- - - Flow 1 ingress (mean 29.27 Mbit/s) —— Flow 1 egress (mean 8.93 Mbit/s)
- - - Flow 2 ingress (mean 10.12 Mbit/s) —— Flow 2 egress (mean 3.71 Mbit/s)
- - - Flow 3 ingress (mean 262.14 Mbit/s) —— Flow 3 egress (mean 11.87 Mbit/s)

• Flow 1 (95th percentile 32.33 ms)   • Flow 2 (95th percentile 32.32 ms)   • Flow 3 (95th percentile 30.96 ms)
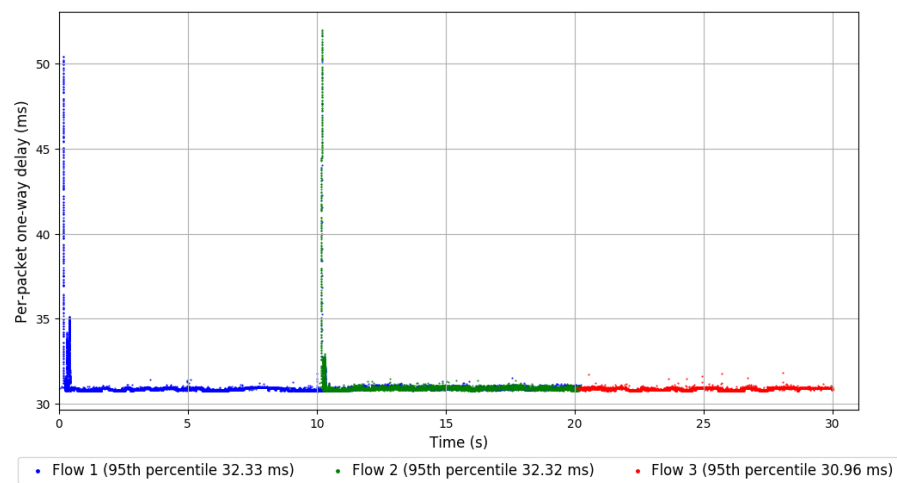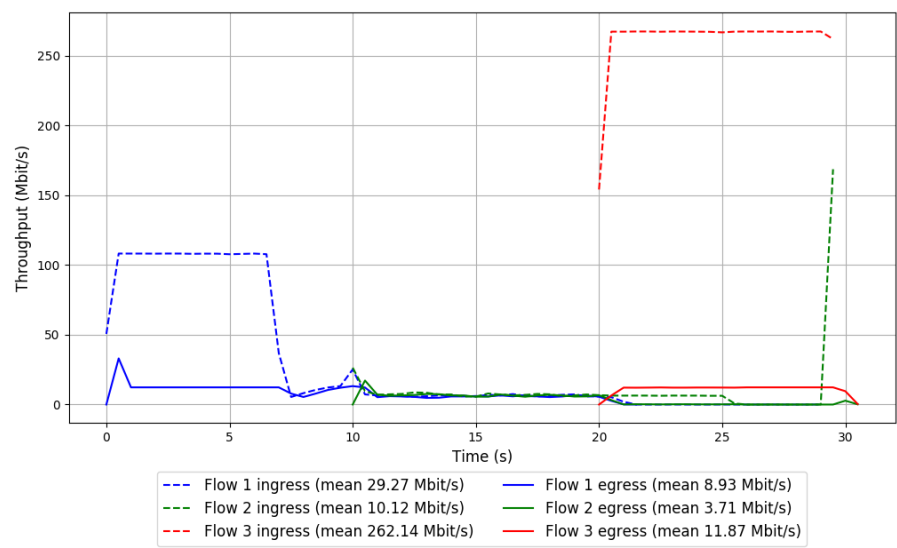
```
Run 2: Statistics of TaoVA-100x

Start at: 2019-01-03 00:36:28
End at: 2019-01-03 00:36:58
Local clock offset: 0.173 ms
Remote clock offset: -3.249 ms


# Below is generated by plot.py at 2019-01-03 02:09:24
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.68 Mbit/s
95th percentile per-packet one-way delay: 31.053 ms
Loss rate: 93.19%
-- Flow 1:
Average throughput: 6.36 Mbit/s
95th percentile per-packet one-way delay: 32.985 ms
Loss rate: 84.15%
-- Flow 2:
Average throughput: 7.56 Mbit/s
95th percentile per-packet one-way delay: 30.940 ms
Loss rate: 92.92%
-- Flow 3:
Average throughput: 9.53 Mbit/s
95th percentile per-packet one-way delay: 30.847 ms
Loss rate: 96.35%
```
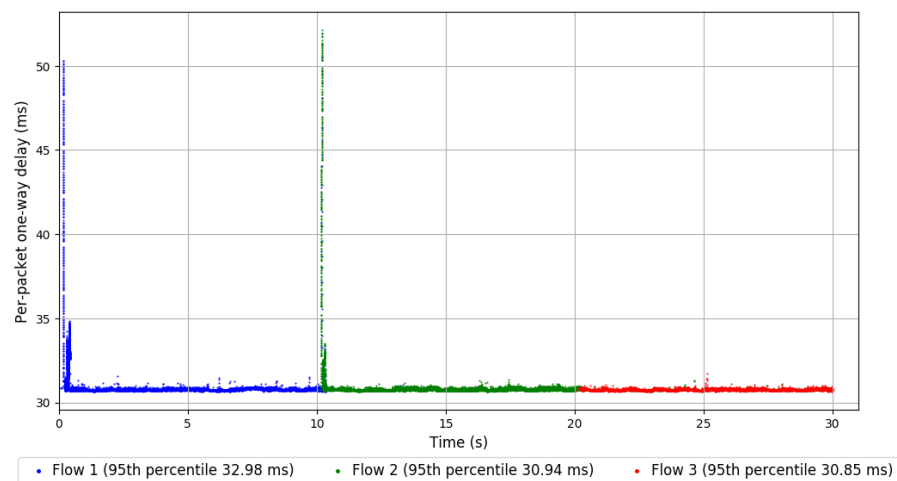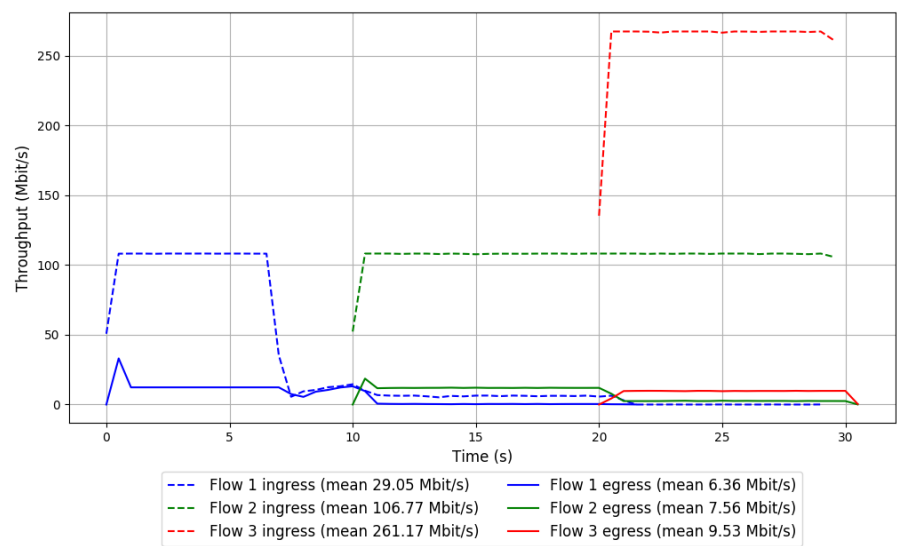
Run 2: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 29.05 Mbit/s) Flow 1 egress (mean 6.36 Mbit/s)
Flow 2 ingress (mean 106.77 Mbit/s) Flow 2 egress (mean 7.56 Mbit/s)
Flow 3 ingress (mean 261.17 Mbit/s) Flow 3 egress (mean 9.53 Mbit/s)

Flow 1 (95th percentile 32.98 ms)   Flow 2 (95th percentile 30.94 ms)   Flow 3 (95th percentile 30.85 ms)
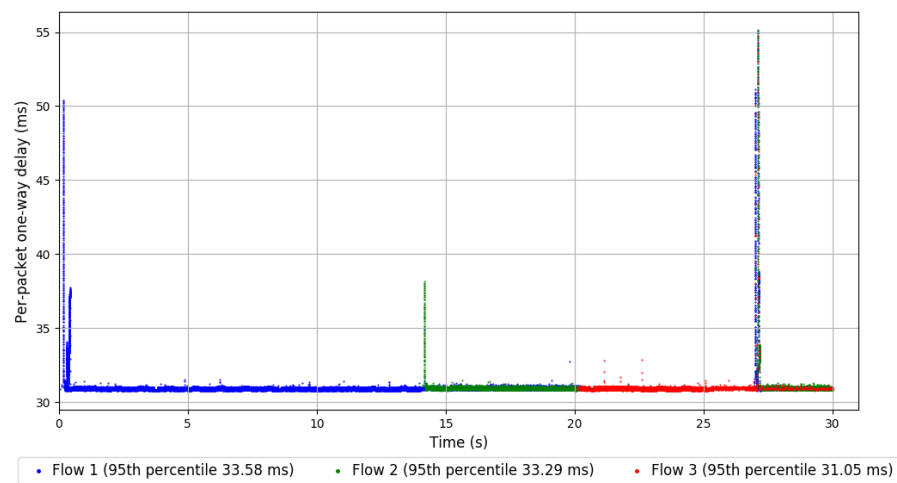
```
Run 3: Statistics of TaoVA-100x

Start at: 2019-01-03 00:59:17
End at: 2019-01-03 00:59:47
Local clock offset: 0.208 ms
Remote clock offset: -2.911 ms


# Below is generated by plot.py at 2019-01-03 02:09:24
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.68 Mbit/s
95th percentile per-packet one-way delay: 32.631 ms
Loss rate: 88.00%
-- Flow 1:
Average throughput: 7.57 Mbit/s
95th percentile per-packet one-way delay: 33.577 ms
Loss rate: 85.43%
-- Flow 2:
Average throughput: 3.91 Mbit/s
95th percentile per-packet one-way delay: 33.290 ms
Loss rate: 62.33%
-- Flow 3:
Average throughput: 7.56 Mbit/s
95th percentile per-packet one-way delay: 31.052 ms
Loss rate: 94.64%
```

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

Flow 1 ingress (mean 51.93 Mbit/s) --- Flow 1 egress (mean 7.57 Mbit/s)
Flow 2 ingress (mean 10.37 Mbit/s) --- Flow 2 egress (mean 3.91 Mbit/s)
Flow 3 ingress (mean 140.80 Mbit/s) --- Flow 3 egress (mean 7.56 Mbit/s)

Flow 1 (95th percentile 33.58 ms)   Flow 2 (95th percentile 33.29 ms)   Flow 3 (95th percentile 31.05 ms)
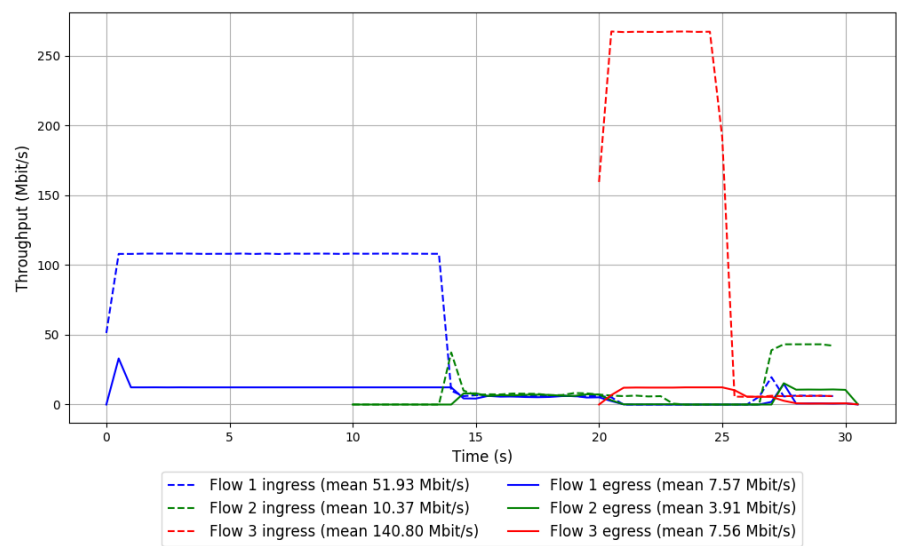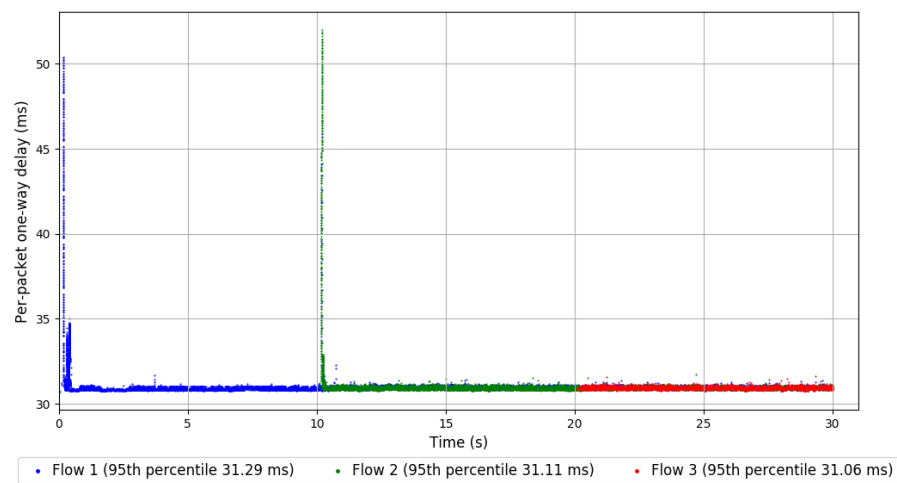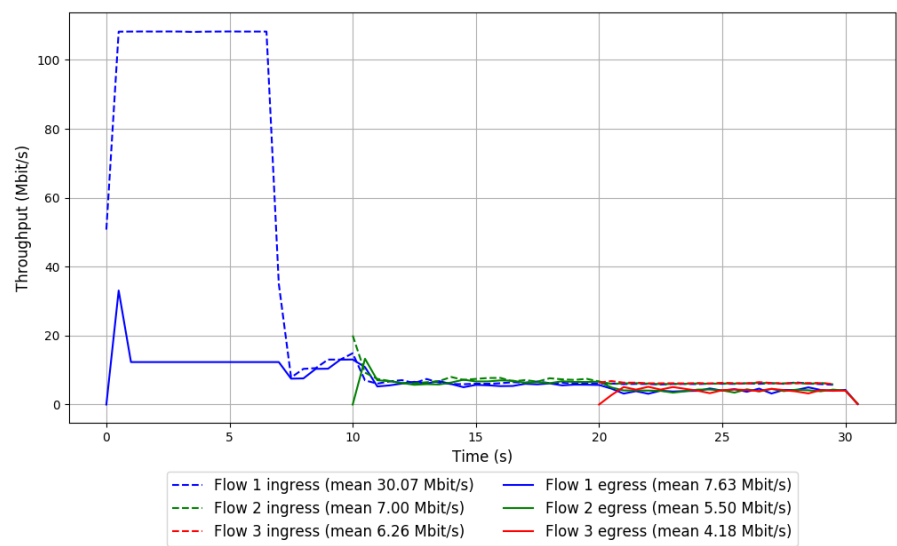
150

```
Run 4: Statistics of TaoVA-100x

Start at: 2019-01-03 01:22:17
End at: 2019-01-03 01:22:47
Local clock offset: 0.362 ms
Remote clock offset: -2.693 ms


# Below is generated by plot.py at 2019-01-03 02:09:24
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.68 Mbit/s
95th percentile per-packet one-way delay: 31.137 ms
Loss rate: 65.57%
-- Flow 1:
Average throughput: 7.63 Mbit/s
95th percentile per-packet one-way delay: 31.290 ms
Loss rate: 74.64%
-- Flow 2:
Average throughput: 5.50 Mbit/s
95th percentile per-packet one-way delay: 31.114 ms
Loss rate: 21.50%
-- Flow 3:
Average throughput: 4.18 Mbit/s
95th percentile per-packet one-way delay: 31.063 ms
Loss rate: 33.24%
```

Run 4: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 30.07 Mbit/s)   Flow 1 egress (mean 7.63 Mbit/s)
Flow 2 ingress (mean 7.00 Mbit/s)   Flow 2 egress (mean 5.50 Mbit/s)
Flow 3 ingress (mean 6.26 Mbit/s)   Flow 3 egress (mean 4.18 Mbit/s)

Flow 1 (95th percentile 31.29 ms)   Flow 2 (95th percentile 31.11 ms)   Flow 3 (95th percentile 31.06 ms)
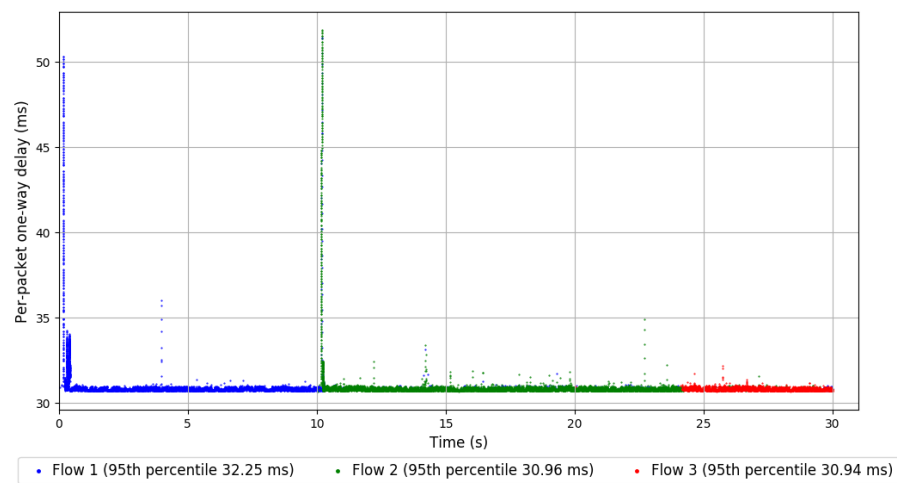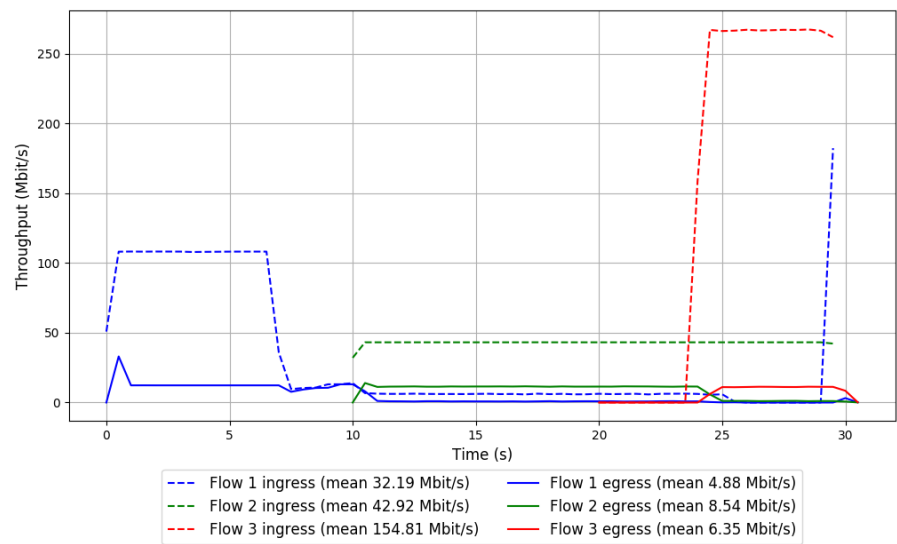
```
Run 5: Statistics of TaoVA-100x

Start at: 2019-01-03 01:45:35
End at: 2019-01-03 01:46:05
Local clock offset: 0.209 ms
Remote clock offset: -2.602 ms


# Below is generated by plot.py at 2019-01-03 02:09:24
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.68 Mbit/s
95th percentile per-packet one-way delay: 31.048 ms
Loss rate: 88.71%
-- Flow 1:
Average throughput: 4.88 Mbit/s
95th percentile per-packet one-way delay: 32.248 ms
Loss rate: 84.83%
-- Flow 2:
Average throughput: 8.54 Mbit/s
95th percentile per-packet one-way delay: 30.957 ms
Loss rate: 80.11%
-- Flow 3:
Average throughput: 6.35 Mbit/s
95th percentile per-packet one-way delay: 30.943 ms
Loss rate: 95.90%
```

Run 5: Report of TaoVA-100x — Data Link

- - - - Flow 1 ingress (mean 32.19 Mbit/s)   —— Flow 1 egress (mean 4.88 Mbit/s)
- - - - Flow 2 ingress (mean 42.92 Mbit/s)   —— Flow 2 egress (mean 8.54 Mbit/s)
- - - - Flow 3 ingress (mean 154.81 Mbit/s)   —— Flow 3 egress (mean 6.35 Mbit/s)

- Flow 1 (95th percentile 32.25 ms)   • Flow 2 (95th percentile 30.96 ms)   • Flow 3 (95th percentile 30.94 ms)
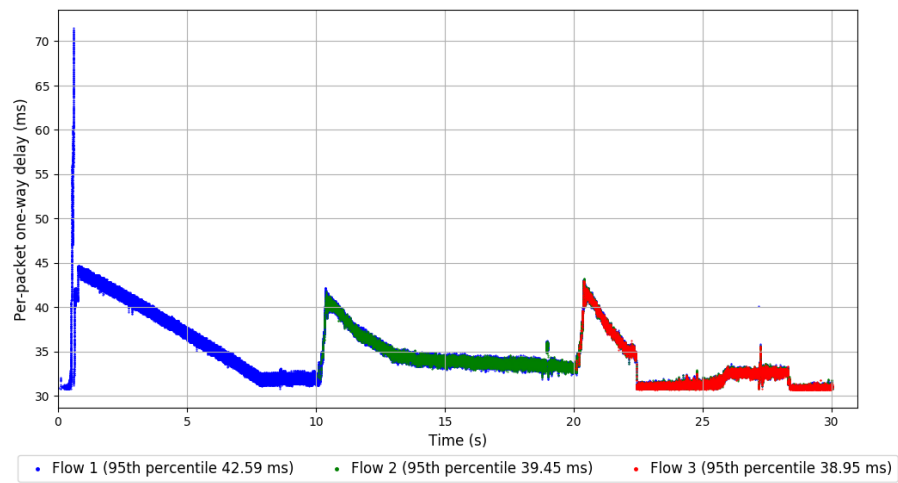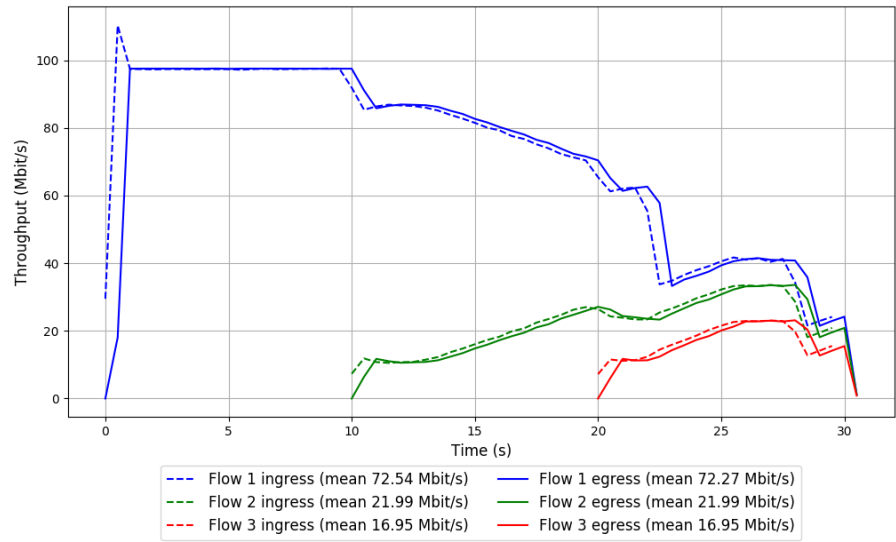
154

```
Run 1: Statistics of TCP Vegas

Start at: 2019-01-03 00:14:24
End at: 2019-01-03 00:14:54
Local clock offset: 0.321 ms
Remote clock offset: -3.557 ms


# Below is generated by plot.py at 2019-01-03 02:09:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.55 Mbit/s
95th percentile per-packet one-way delay: 42.114 ms
Loss rate: 0.29%
-- Flow 1:
Average throughput: 72.27 Mbit/s
95th percentile per-packet one-way delay: 42.586 ms
Loss rate: 0.37%
-- Flow 2:
Average throughput: 21.99 Mbit/s
95th percentile per-packet one-way delay: 39.450 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 16.95 Mbit/s
95th percentile per-packet one-way delay: 38.954 ms
Loss rate: 0.01%
```

Run 1: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 72.54 Mbit/s) --- Flow 1 egress (mean 72.27 Mbit/s)
Flow 2 ingress (mean 21.99 Mbit/s) --- Flow 2 egress (mean 21.99 Mbit/s)
Flow 3 ingress (mean 16.95 Mbit/s) --- Flow 3 egress (mean 16.95 Mbit/s)

Flow 1 (95th percentile 42.59 ms)   Flow 2 (95th percentile 39.45 ms)   Flow 3 (95th percentile 38.95 ms)

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```
Run 2: Statistics of TCP Vegas

Start at: 2019-01-03 00:37:39
End at: 2019-01-03 00:38:09
Local clock offset: 0.16 ms
Remote clock offset: -3.436 ms


# Below is generated by plot.py at 2019-01-03 02:10:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 88.95 Mbit/s
95th percentile per-packet one-way delay: 41.441 ms
Loss rate: 0.52%
-- Flow 1:
Average throughput: 47.93 Mbit/s
95th percentile per-packet one-way delay: 42.378 ms
Loss rate: 0.69%
-- Flow 2:
Average throughput: 51.25 Mbit/s
95th percentile per-packet one-way delay: 37.020 ms
Loss rate: 0.38%
-- Flow 3:
Average throughput: 20.63 Mbit/s
95th percentile per-packet one-way delay: 36.893 ms
Loss rate: 0.00%
```
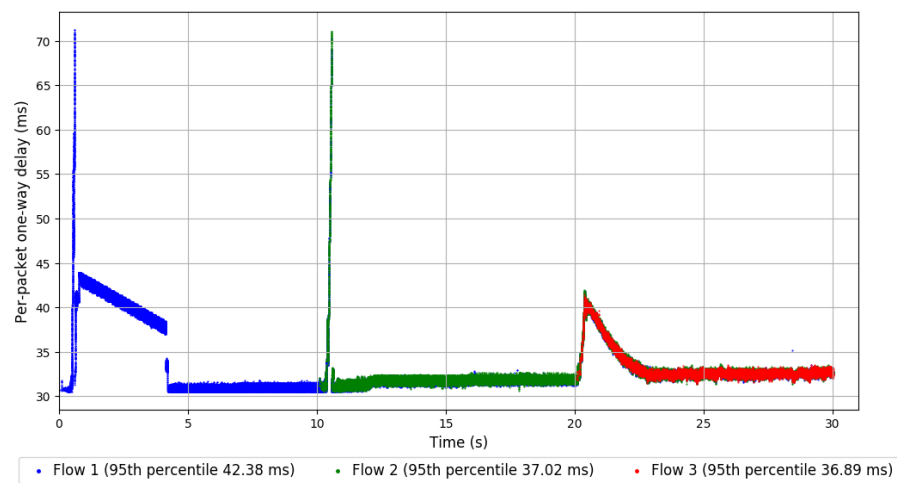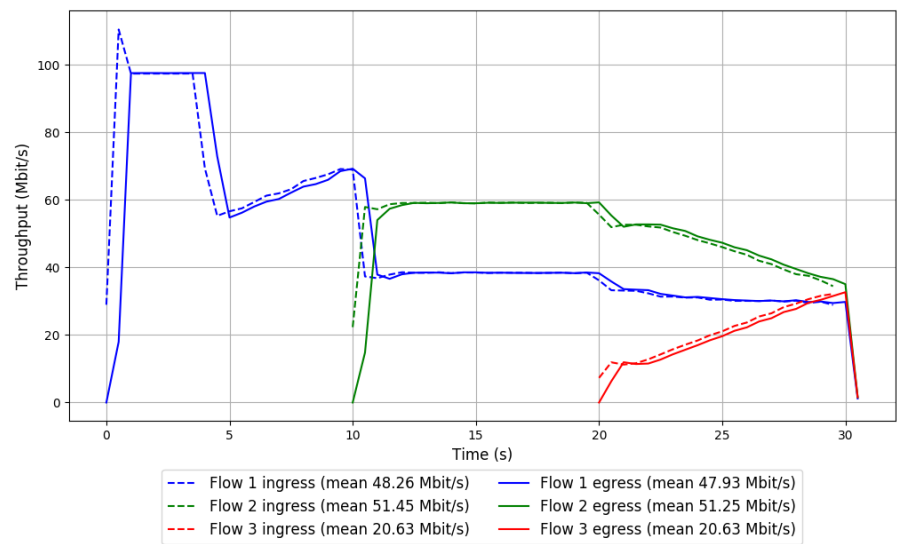
Run 2: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 48.26 Mbit/s) --- Flow 1 egress (mean 47.93 Mbit/s)
Flow 2 ingress (mean 51.45 Mbit/s) --- Flow 2 egress (mean 51.25 Mbit/s)
Flow 3 ingress (mean 20.63 Mbit/s) --- Flow 3 egress (mean 20.63 Mbit/s)

Flow 1 (95th percentile 42.38 ms)   Flow 2 (95th percentile 37.02 ms)   Flow 3 (95th percentile 36.89 ms)
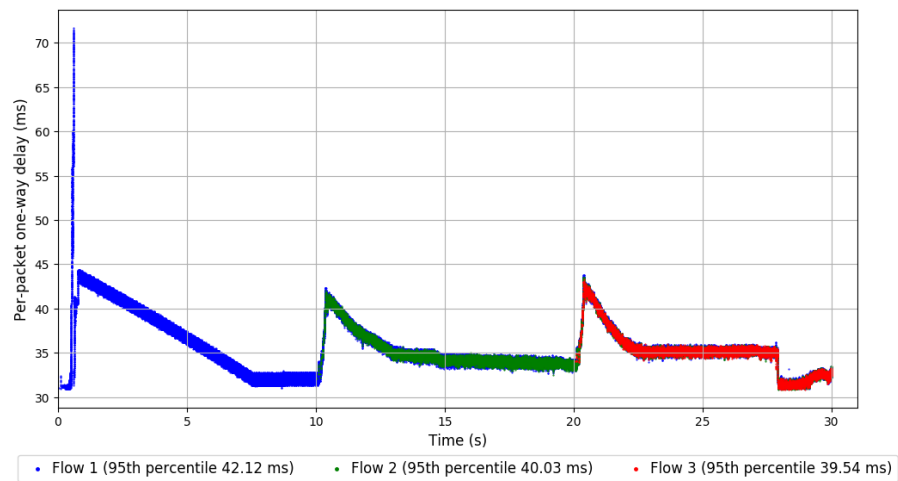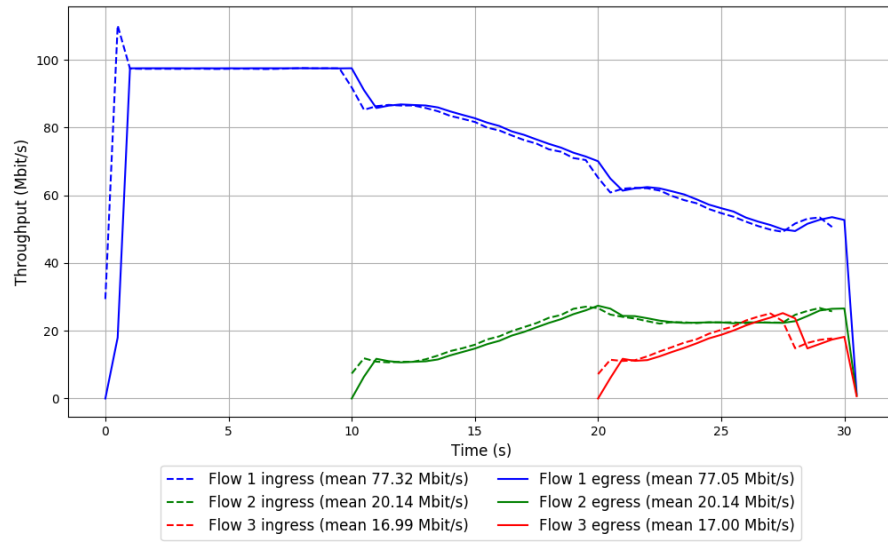
```
Run 3: Statistics of TCP Vegas

Start at: 2019-01-03 01:00:28
End at: 2019-01-03 01:00:58
Local clock offset: 0.194 ms
Remote clock offset: -2.827 ms


# Below is generated by plot.py at 2019-01-03 02:10:16
# Datalink statistics
-- Total of 3 flows:
Average throughput: 96.12 Mbit/s
95th percentile per-packet one-way delay: 41.844 ms
Loss rate: 0.27%
-- Flow 1:
Average throughput: 77.05 Mbit/s
95th percentile per-packet one-way delay: 42.117 ms
Loss rate: 0.34%
-- Flow 2:
Average throughput: 20.14 Mbit/s
95th percentile per-packet one-way delay: 40.027 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 17.00 Mbit/s
95th percentile per-packet one-way delay: 39.541 ms
Loss rate: 0.01%
```

Run 3: Report of TCP Vegas — Data Link

```
Run 4: Statistics of TCP Vegas

Start at: 2019-01-03 01:23:27
End at: 2019-01-03 01:23:57
Local clock offset: 0.387 ms
Remote clock offset: -2.66 ms


# Below is generated by plot.py at 2019-01-03 02:10:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 41.982 ms
Loss rate: 0.27%
-- Flow 1:
Average throughput: 76.71 Mbit/s
95th percentile per-packet one-way delay: 42.291 ms
Loss rate: 0.34%
-- Flow 2:
Average throughput: 19.79 Mbit/s
95th percentile per-packet one-way delay: 39.891 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 19.26 Mbit/s
95th percentile per-packet one-way delay: 38.999 ms
Loss rate: 0.00%
```
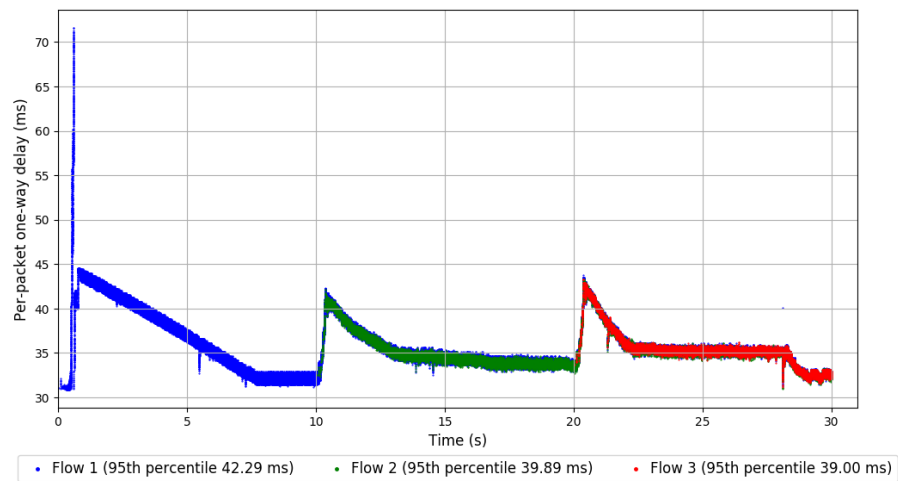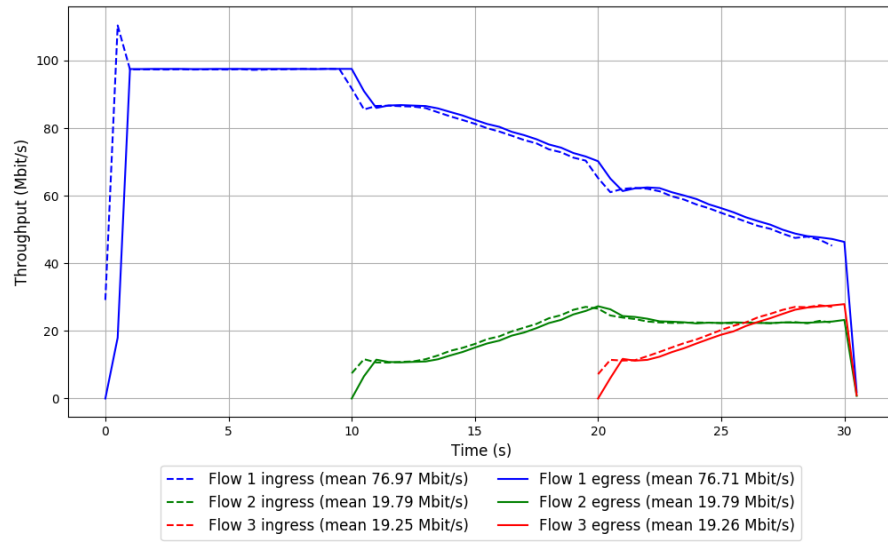
Run 4: Report of TCP Vegas — Data Link

```
Run 5: Statistics of TCP Vegas

Start at: 2019-01-03 01:46:45
End at: 2019-01-03 01:47:15
Local clock offset: 0.208 ms
Remote clock offset: -2.71 ms


# Below is generated by plot.py at 2019-01-03 02:10:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 83.35 Mbit/s
95th percentile per-packet one-way delay: 47.747 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 35.68 Mbit/s
95th percentile per-packet one-way delay: 43.839 ms
Loss rate: 0.92%
-- Flow 2:
Average throughput: 59.48 Mbit/s
95th percentile per-packet one-way delay: 50.349 ms
Loss rate: 0.62%
-- Flow 3:
Average throughput: 24.15 Mbit/s
95th percentile per-packet one-way delay: 47.332 ms
Loss rate: 0.00%
```
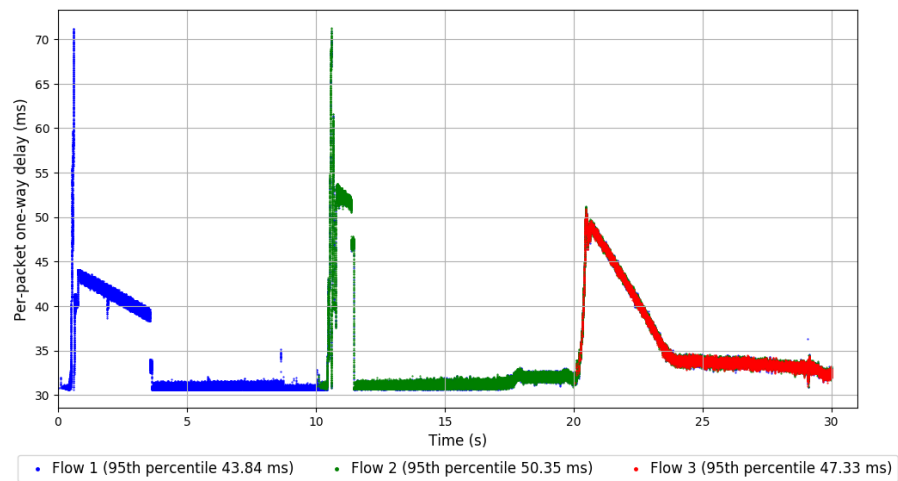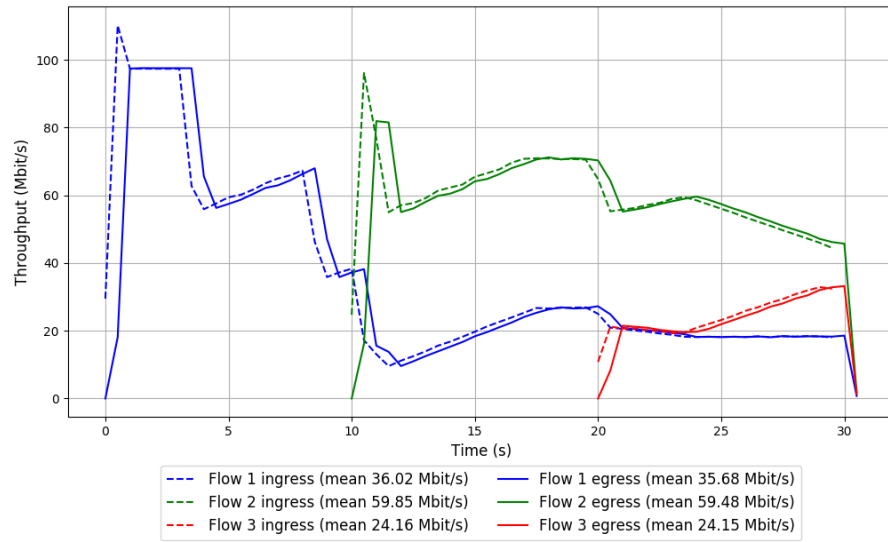
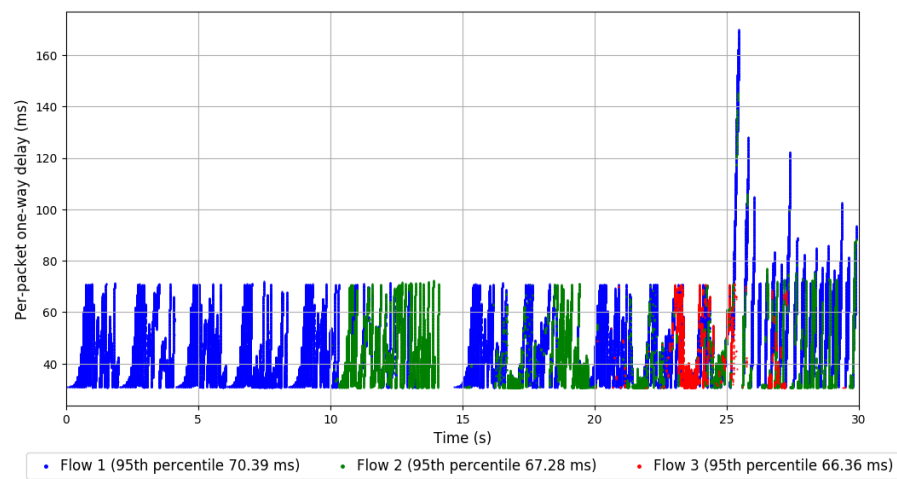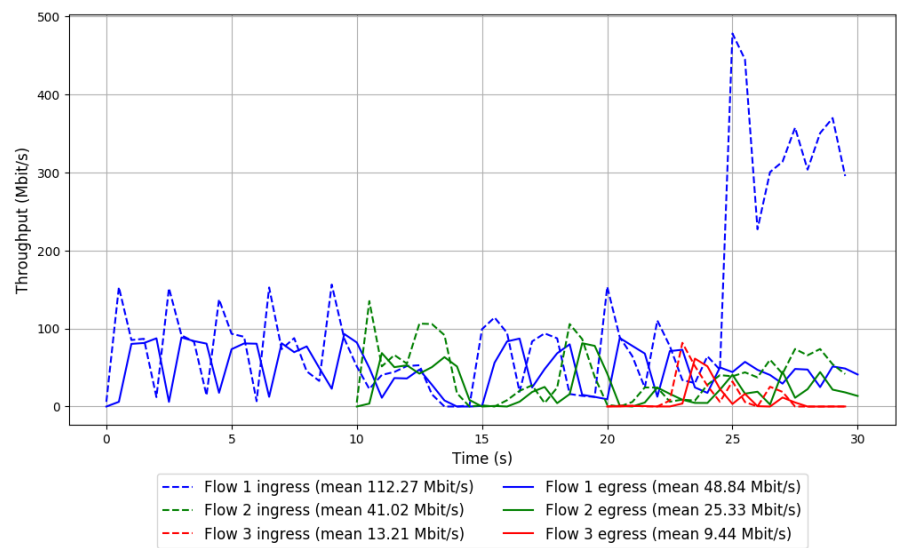Run 5: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2019-01-03 00:19:20
End at: 2019-01-03 00:19:50
Local clock offset: 0.355 ms
Remote clock offset: -3.504 ms


# Below is generated by plot.py at 2019-01-03 02:10:24
# Datalink statistics
-- Total of 3 flows:
Average throughput: 68.63 Mbit/s
95th percentile per-packet one-way delay: 69.361 ms
Loss rate: 52.23%
-- Flow 1:
Average throughput: 48.84 Mbit/s
95th percentile per-packet one-way delay: 70.393 ms
Loss rate: 56.42%
-- Flow 2:
Average throughput: 25.33 Mbit/s
95th percentile per-packet one-way delay: 67.284 ms
Loss rate: 38.31%
-- Flow 3:
Average throughput: 9.44 Mbit/s
95th percentile per-packet one-way delay: 66.363 ms
Loss rate: 31.35%
```

Run 1: Report of Verus — Data Link

- - - - Flow 1 ingress (mean 112.27 Mbit/s) ——— Flow 1 egress (mean 48.84 Mbit/s)
- - - - Flow 2 ingress (mean 41.02 Mbit/s) ——— Flow 2 egress (mean 25.33 Mbit/s)
- - - - Flow 3 ingress (mean 13.21 Mbit/s) ——— Flow 3 egress (mean 9.44 Mbit/s)

- Flow 1 (95th percentile 70.39 ms)   - Flow 2 (95th percentile 67.28 ms)   - Flow 3 (95th percentile 66.36 ms)
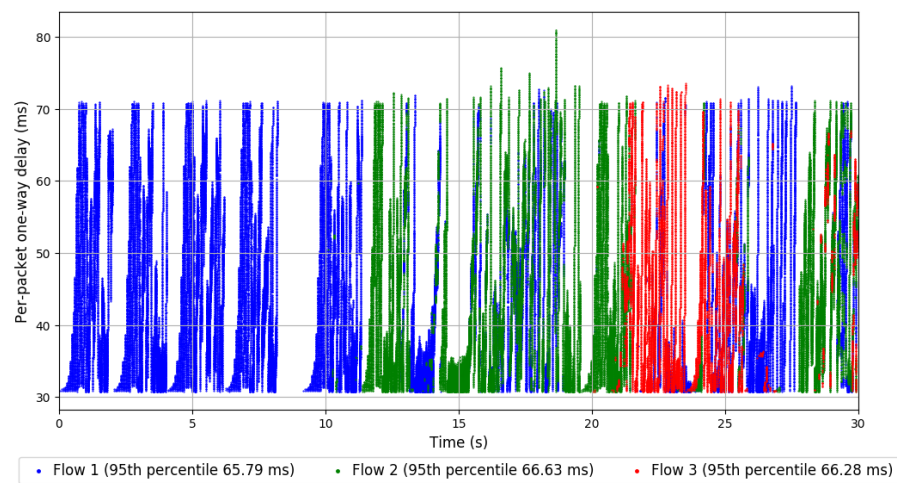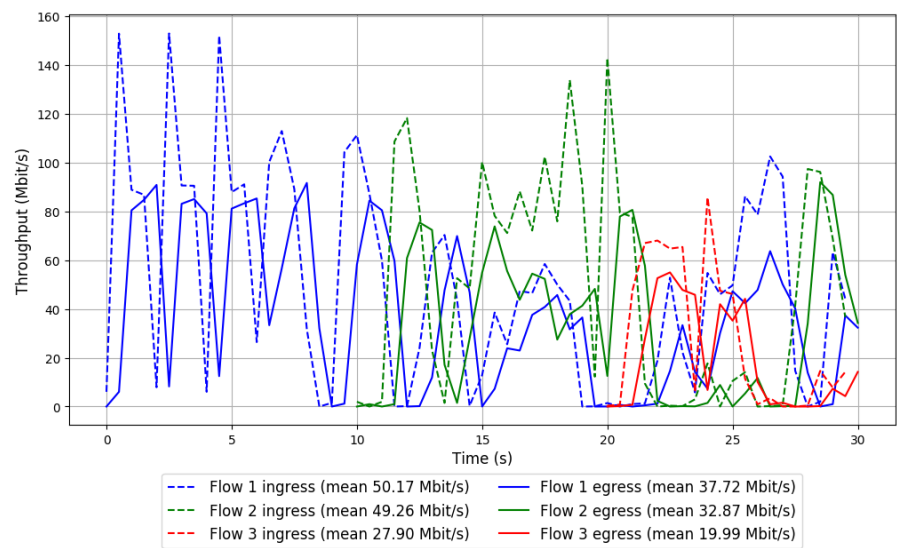
166

```
Run 2: Statistics of Verus

Start at: 2019-01-03 00:42:33
End at: 2019-01-03 00:43:03
Local clock offset: 0.15 ms
Remote clock offset: -3.103 ms


# Below is generated by plot.py at 2019-01-03 02:10:24
# Datalink statistics
-- Total of 3 flows:
Average throughput: 66.16 Mbit/s
95th percentile per-packet one-way delay: 66.092 ms
Loss rate: 28.10%
-- Flow 1:
Average throughput: 37.72 Mbit/s
95th percentile per-packet one-way delay: 65.786 ms
Loss rate: 24.74%
-- Flow 2:
Average throughput: 32.87 Mbit/s
95th percentile per-packet one-way delay: 66.627 ms
Loss rate: 33.24%
-- Flow 3:
Average throughput: 19.99 Mbit/s
95th percentile per-packet one-way delay: 66.277 ms
Loss rate: 28.15%
```
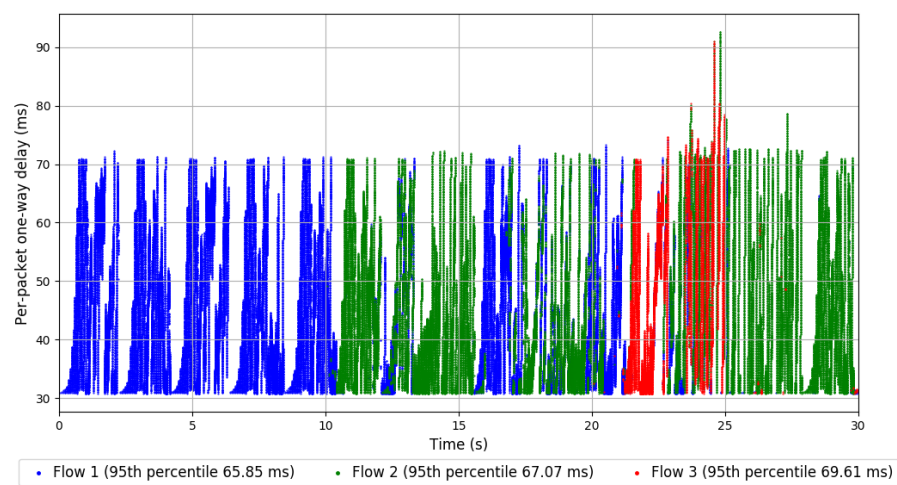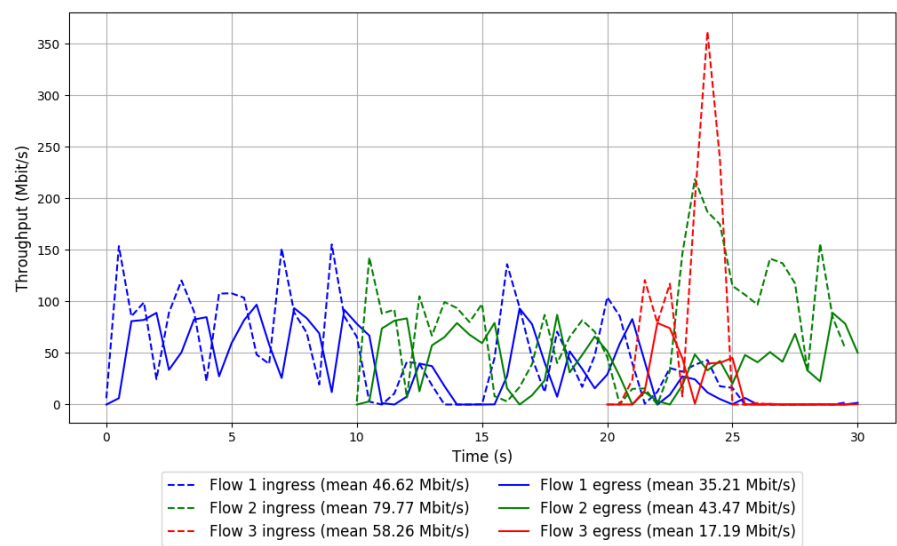
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2019-01-03 01:05:18
End at: 2019-01-03 01:05:48
Local clock offset: 0.24 ms
Remote clock offset: -2.824 ms


# Below is generated by plot.py at 2019-01-03 02:10:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 69.69 Mbit/s
95th percentile per-packet one-way delay: 66.673 ms
Loss rate: 41.31%
-- Flow 1:
Average throughput: 35.21 Mbit/s
95th percentile per-packet one-way delay: 65.852 ms
Loss rate: 24.46%
-- Flow 2:
Average throughput: 43.47 Mbit/s
95th percentile per-packet one-way delay: 67.071 ms
Loss rate: 45.55%
-- Flow 3:
Average throughput: 17.19 Mbit/s
95th percentile per-packet one-way delay: 69.607 ms
Loss rate: 70.49%
```

Run 3: Report of Verus — Data Link

Flow 1 ingress (mean 46.62 Mbit/s) --- Flow 1 egress (mean 35.21 Mbit/s)
Flow 2 ingress (mean 79.77 Mbit/s) --- Flow 2 egress (mean 43.47 Mbit/s)
Flow 3 ingress (mean 58.26 Mbit/s) --- Flow 3 egress (mean 17.19 Mbit/s)

Flow 1 (95th percentile 65.85 ms) • Flow 2 (95th percentile 67.07 ms) • Flow 3 (95th percentile 69.61 ms)
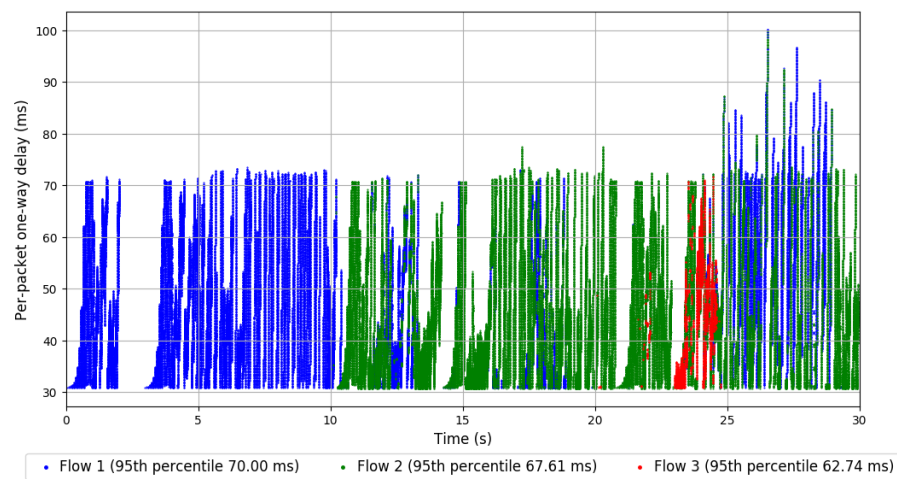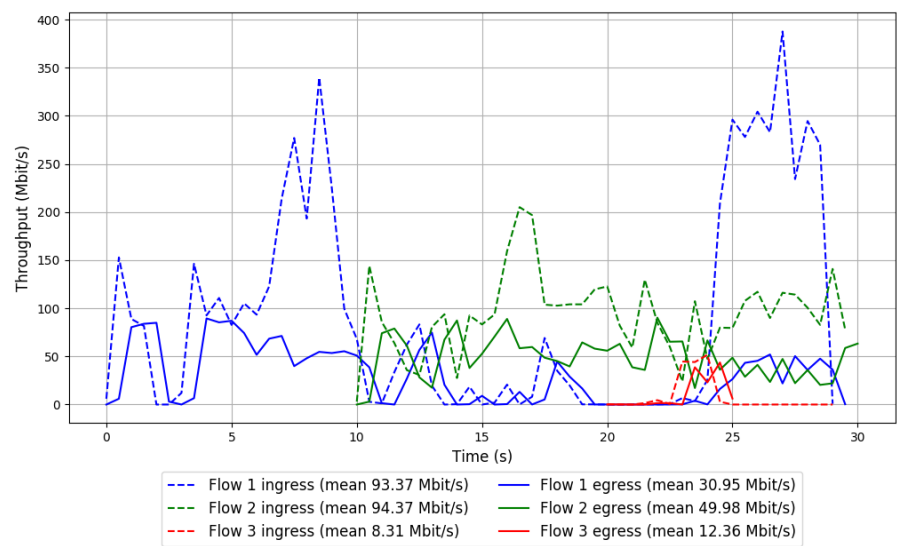
```
Run 4: Statistics of Verus

Start at: 2019-01-03 01:28:15
End at: 2019-01-03 01:28:45
Local clock offset: 0.301 ms
Remote clock offset: -2.632 ms


# Below is generated by plot.py at 2019-01-03 02:11:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 65.48 Mbit/s
95th percentile per-packet one-way delay: 68.775 ms
Loss rate: 58.27%
-- Flow 1:
Average throughput: 30.95 Mbit/s
95th percentile per-packet one-way delay: 70.000 ms
Loss rate: 66.93%
-- Flow 2:
Average throughput: 49.98 Mbit/s
95th percentile per-packet one-way delay: 67.610 ms
Loss rate: 47.01%
-- Flow 3:
Average throughput: 12.36 Mbit/s
95th percentile per-packet one-way delay: 62.742 ms
Loss rate: 23.63%
```
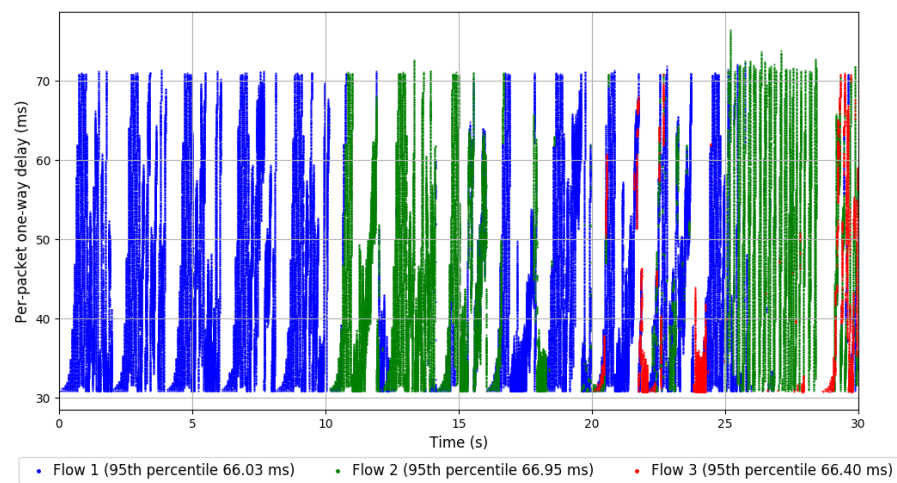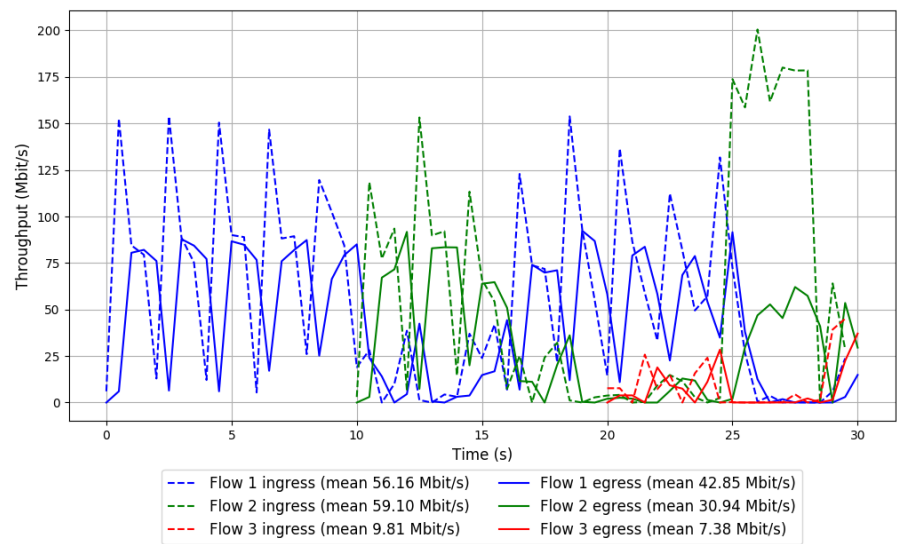
Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2019-01-03 01:51:33
End at: 2019-01-03 01:52:03
Local clock offset: 0.204 ms
Remote clock offset: -2.523 ms

# Below is generated by plot.py at 2019-01-03 02:11:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 65.82 Mbit/s
95th percentile per-packet one-way delay: 66.319 ms
Loss rate: 33.22%
-- Flow 1:
Average throughput: 42.85 Mbit/s
95th percentile per-packet one-way delay: 66.032 ms
Loss rate: 23.62%
-- Flow 2:
Average throughput: 30.94 Mbit/s
95th percentile per-packet one-way delay: 66.952 ms
Loss rate: 47.67%
-- Flow 3:
Average throughput: 7.38 Mbit/s
95th percentile per-packet one-way delay: 66.402 ms
Loss rate: 24.51%
```

Run 5: Report of Verus — Data Link

Flow 1 ingress (mean 56.16 Mbit/s) --- Flow 1 egress (mean 42.85 Mbit/s)
Flow 2 ingress (mean 59.10 Mbit/s) --- Flow 2 egress (mean 30.94 Mbit/s)
Flow 3 ingress (mean 9.81 Mbit/s) --- Flow 3 egress (mean 7.38 Mbit/s)

Flow 1 (95th percentile 66.03 ms) • Flow 2 (95th percentile 66.95 ms) • Flow 3 (95th percentile 66.40 ms)
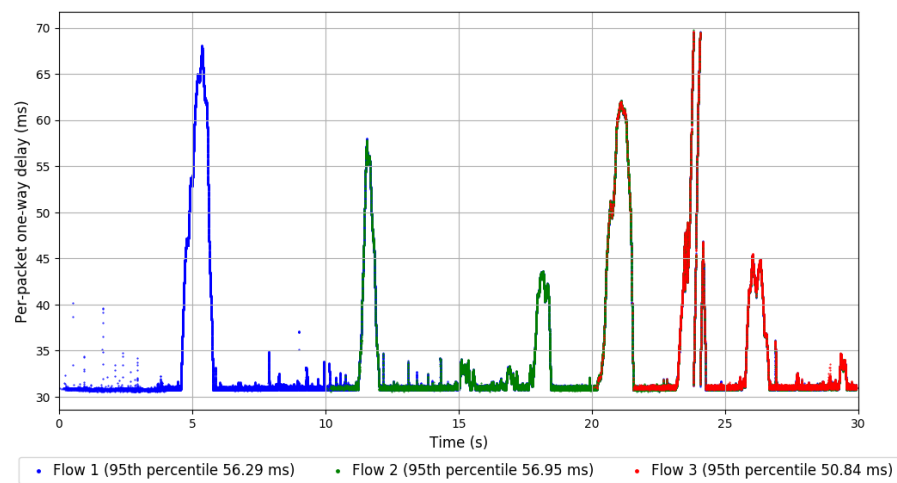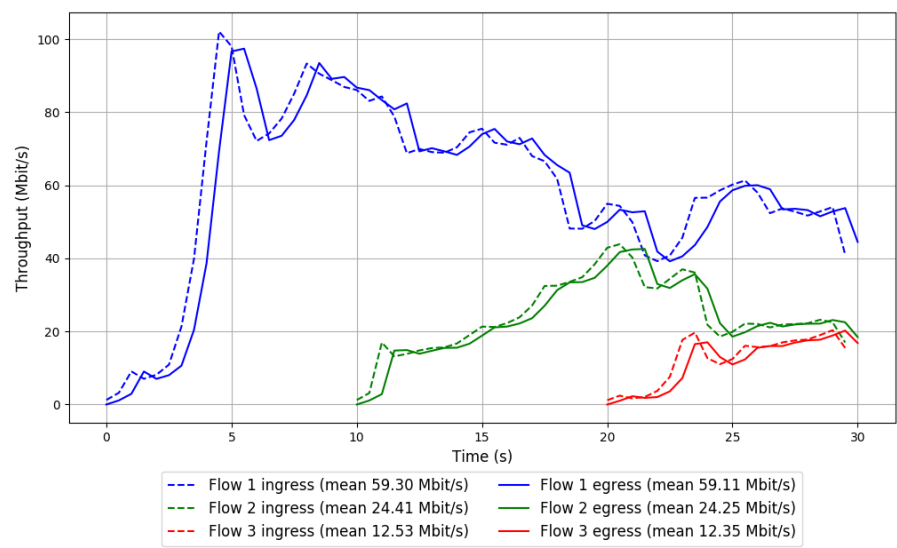
```
Run 1: Statistics of PCC-Vivace

Start at: 2019-01-03 00:11:51
End at: 2019-01-03 00:12:21
Local clock offset: 0.322 ms
Remote clock offset: -3.611 ms


# Below is generated by plot.py at 2019-01-03 02:11:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 79.32 Mbit/s
95th percentile per-packet one-way delay: 56.255 ms
Loss rate: 0.45%
-- Flow 1:
Average throughput: 59.11 Mbit/s
95th percentile per-packet one-way delay: 56.287 ms
Loss rate: 0.32%
-- Flow 2:
Average throughput: 24.25 Mbit/s
95th percentile per-packet one-way delay: 56.951 ms
Loss rate: 0.66%
-- Flow 3:
Average throughput: 12.35 Mbit/s
95th percentile per-packet one-way delay: 50.836 ms
Loss rate: 1.41%
```

Run 1: Report of PCC-Vivace — Data Link

- - - Flow 1 ingress (mean 59.30 Mbit/s) —— Flow 1 egress (mean 59.11 Mbit/s)
- - - Flow 2 ingress (mean 24.41 Mbit/s) —— Flow 2 egress (mean 24.25 Mbit/s)
- - - Flow 3 ingress (mean 12.53 Mbit/s) —— Flow 3 egress (mean 12.35 Mbit/s)

• Flow 1 (95th percentile 56.29 ms)   • Flow 2 (95th percentile 56.95 ms)   • Flow 3 (95th percentile 50.84 ms)
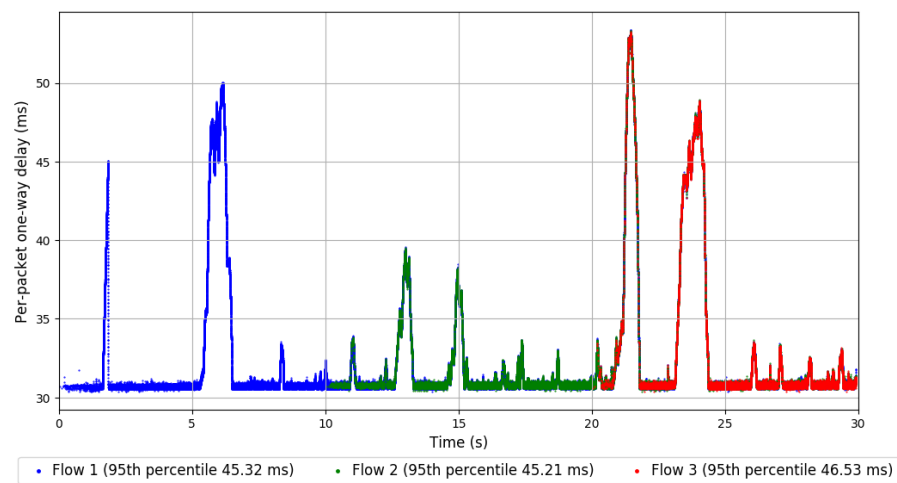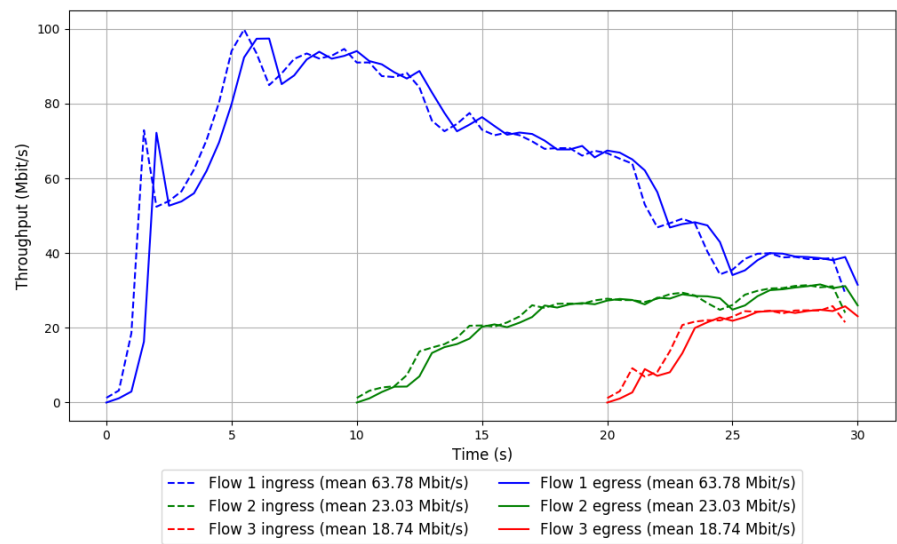
```
Run 2: Statistics of PCC-Vivace

Start at: 2019-01-03 00:35:09
End at: 2019-01-03 00:35:39
Local clock offset: 0.183 ms
Remote clock offset: -3.418 ms


# Below is generated by plot.py at 2019-01-03 02:11:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 85.28 Mbit/s
95th percentile per-packet one-way delay: 45.440 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 63.78 Mbit/s
95th percentile per-packet one-way delay: 45.323 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 23.03 Mbit/s
95th percentile per-packet one-way delay: 45.211 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 18.74 Mbit/s
95th percentile per-packet one-way delay: 46.528 ms
Loss rate: 0.00%
```

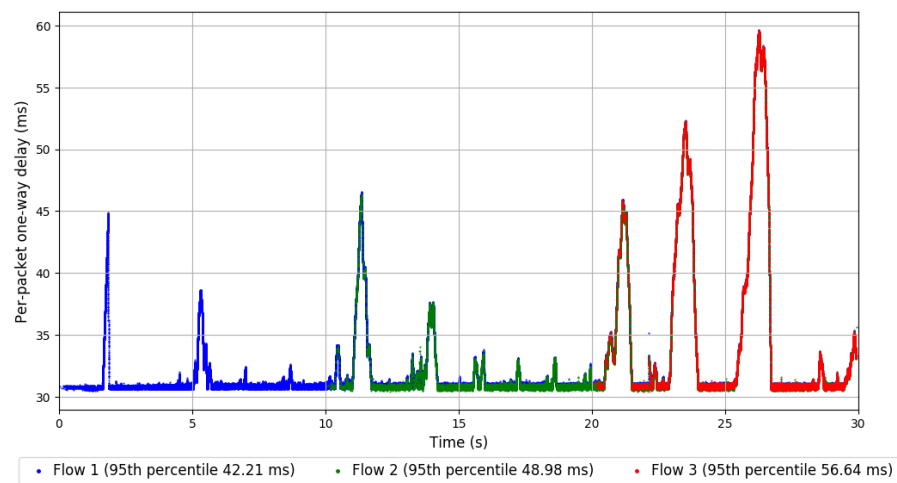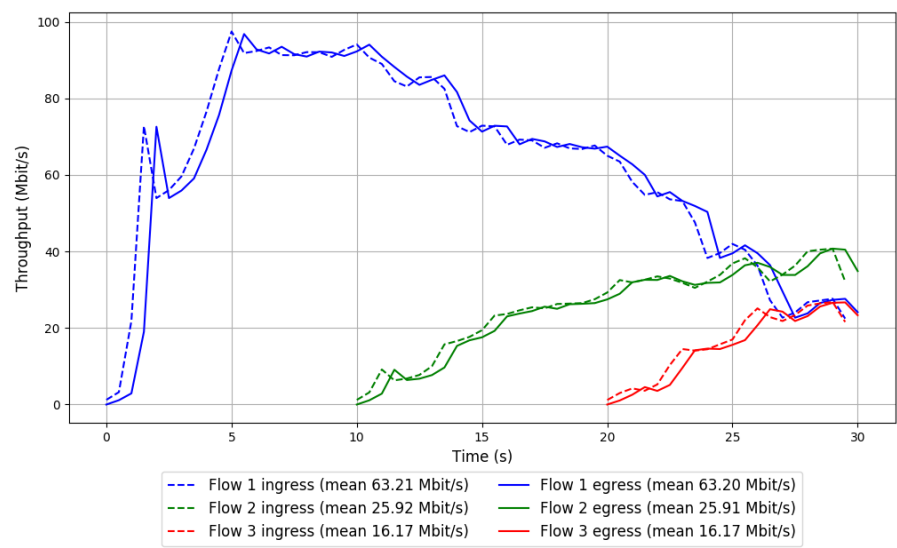Run 2: Report of PCC-Vivace — Data Link

```
Run 3: Statistics of PCC-Vivace

Start at: 2019-01-03 00:58:03
End at: 2019-01-03 00:58:33
Local clock offset: 0.197 ms
Remote clock offset: -3.131 ms


# Below is generated by plot.py at 2019-01-03 02:11:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 85.77 Mbit/s
95th percentile per-packet one-way delay: 45.288 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 63.20 Mbit/s
95th percentile per-packet one-way delay: 42.210 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 25.91 Mbit/s
95th percentile per-packet one-way delay: 48.975 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 16.17 Mbit/s
95th percentile per-packet one-way delay: 56.640 ms
Loss rate: 0.00%
```
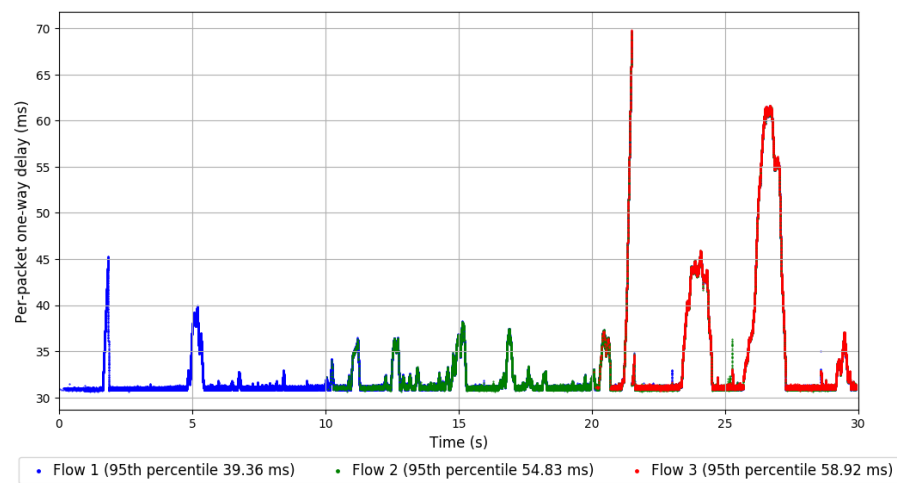
Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 63.21 Mbit/s) --- Flow 1 egress (mean 63.20 Mbit/s)
Flow 2 ingress (mean 25.92 Mbit/s) --- Flow 2 egress (mean 25.91 Mbit/s)
Flow 3 ingress (mean 16.17 Mbit/s) --- Flow 3 egress (mean 16.17 Mbit/s)

Flow 1 (95th percentile 42.21 ms) • Flow 2 (95th percentile 48.98 ms) • Flow 3 (95th percentile 56.64 ms)
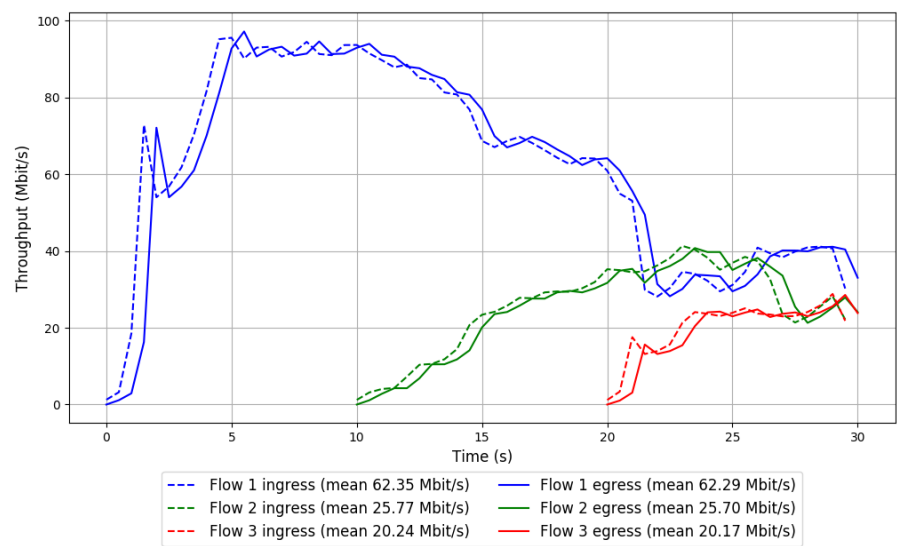
```
Run 4: Statistics of PCC-Vivace

Start at: 2019-01-03 01:21:03
End at: 2019-01-03 01:21:33
Local clock offset: 0.343 ms
Remote clock offset: -2.714 ms


# Below is generated by plot.py at 2019-01-03 02:11:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 86.04 Mbit/s
95th percentile per-packet one-way delay: 44.209 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 62.29 Mbit/s
95th percentile per-packet one-way delay: 39.357 ms
Loss rate: 0.10%
-- Flow 2:
Average throughput: 25.70 Mbit/s
95th percentile per-packet one-way delay: 54.833 ms
Loss rate: 0.26%
-- Flow 3:
Average throughput: 20.17 Mbit/s
95th percentile per-packet one-way delay: 58.918 ms
Loss rate: 0.37%
```
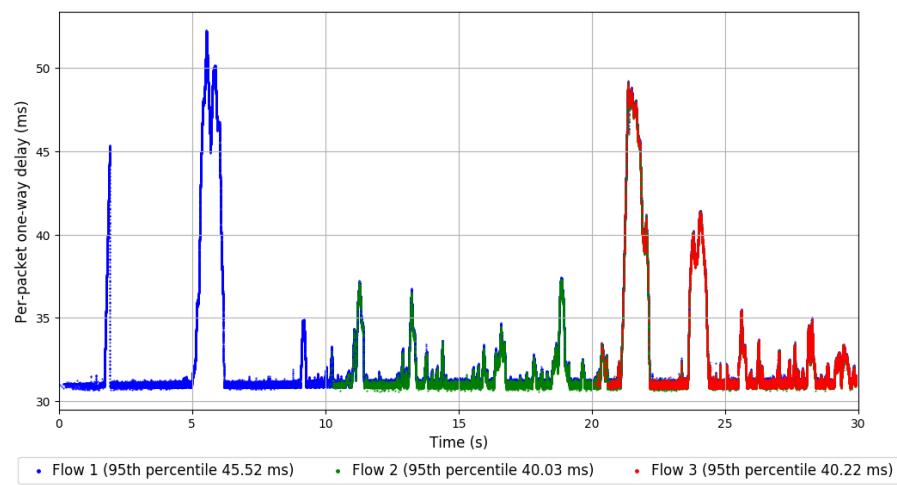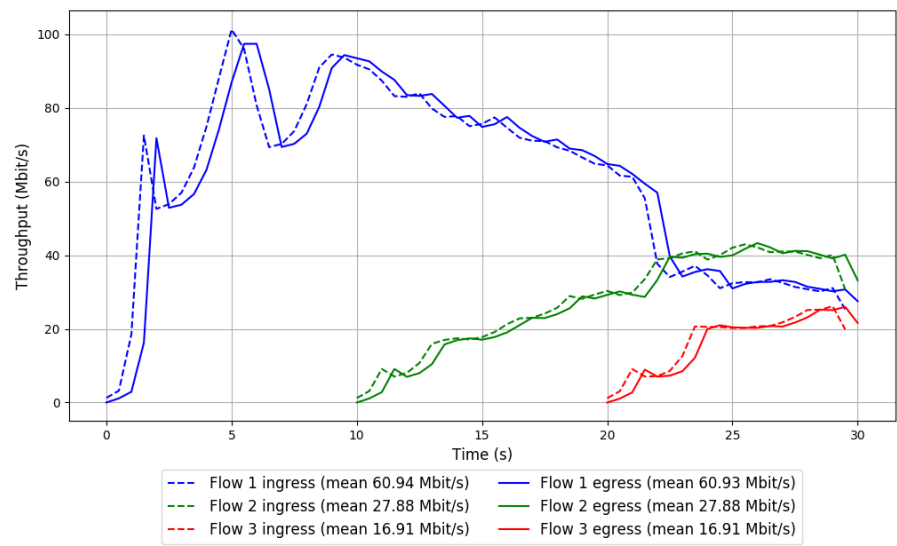
Run 4: Report of PCC-Vivace — Data Link

- - - - Flow 1 ingress (mean 62.35 Mbit/s) ——— Flow 1 egress (mean 62.29 Mbit/s)
- - - - Flow 2 ingress (mean 25.77 Mbit/s) ——— Flow 2 egress (mean 25.70 Mbit/s)
- - - - Flow 3 ingress (mean 20.24 Mbit/s) ——— Flow 3 egress (mean 20.17 Mbit/s)

- Flow 1 (95th percentile 39.36 ms)   • Flow 2 (95th percentile 54.83 ms)   • Flow 3 (95th percentile 58.92 ms)

```
Run 5: Statistics of PCC-Vivace

Start at: 2019-01-03 01:44:20
End at: 2019-01-03 01:44:50
Local clock offset: 0.209 ms
Remote clock offset: -2.553 ms


# Below is generated by plot.py at 2019-01-03 02:11:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 85.06 Mbit/s
95th percentile per-packet one-way delay: 43.532 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 60.93 Mbit/s
95th percentile per-packet one-way delay: 45.518 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 27.88 Mbit/s
95th percentile per-packet one-way delay: 40.026 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 16.91 Mbit/s
95th percentile per-packet one-way delay: 40.215 ms
Loss rate: 0.00%
```

Run 5: Report of PCC-Vivace — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2019-01-03 00:04:27
End at: 2019-01-03 00:04:58
Local clock offset: 0.354 ms
Remote clock offset: -3.65 ms


# Below is generated by plot.py at 2019-01-03 02:11:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 31.477 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.458 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.422 ms
Loss rate: 0.05%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.477 ms
Loss rate: 0.00%
```
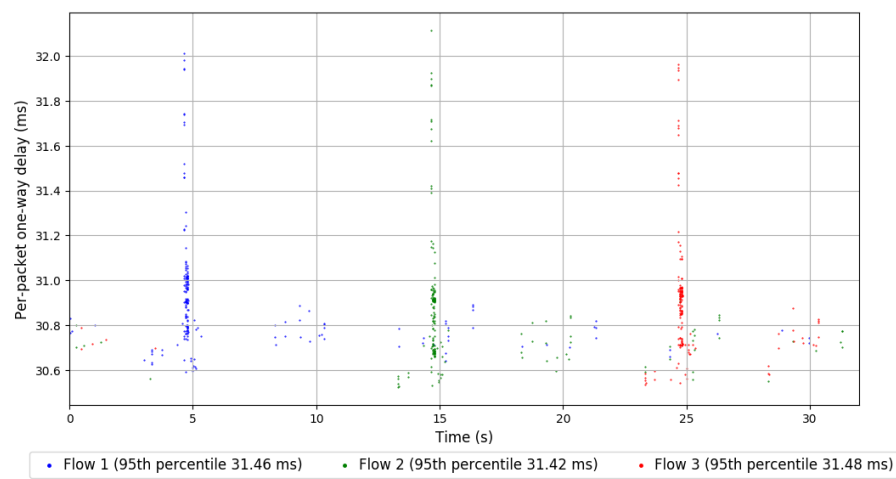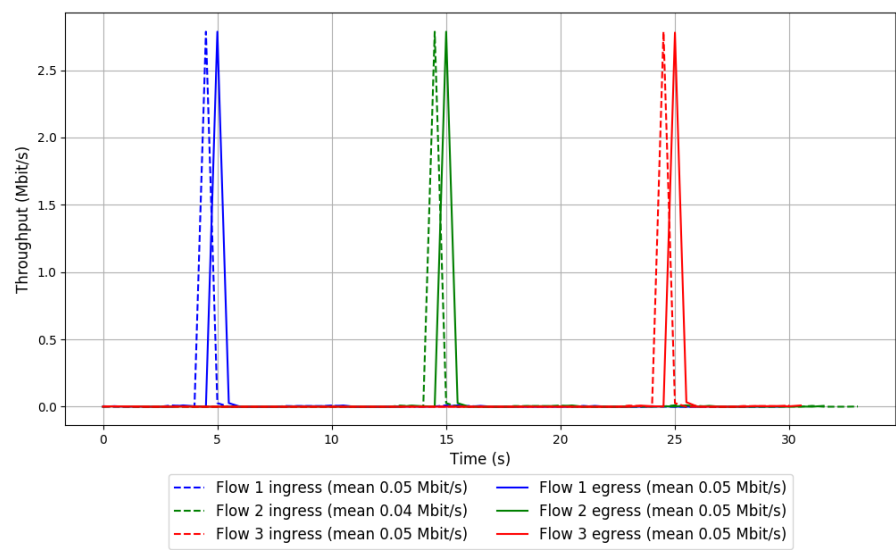
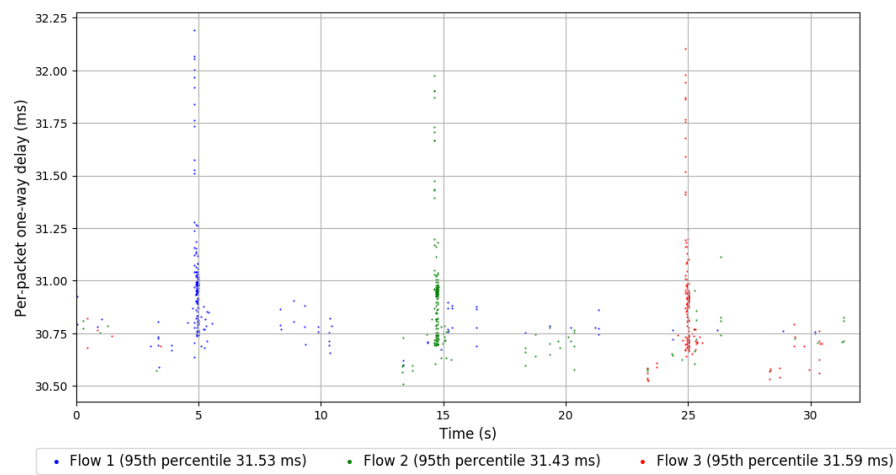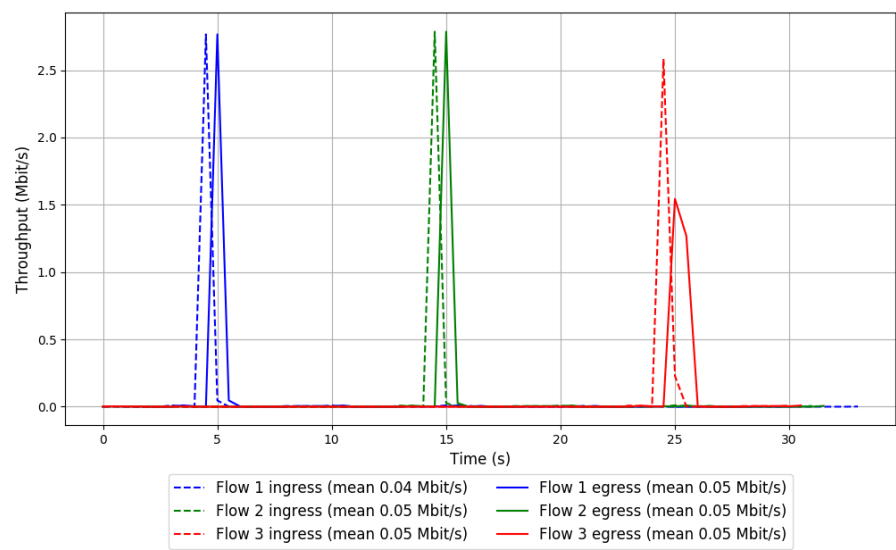Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2019-01-03 00:27:49
End at: 2019-01-03 00:28:19
Local clock offset: 0.292 ms
Remote clock offset: -3.406 ms


# Below is generated by plot.py at 2019-01-03 02:11:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 31.527 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.527 ms
Loss rate: 0.05%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.435 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.590 ms
Loss rate: 0.00%
```

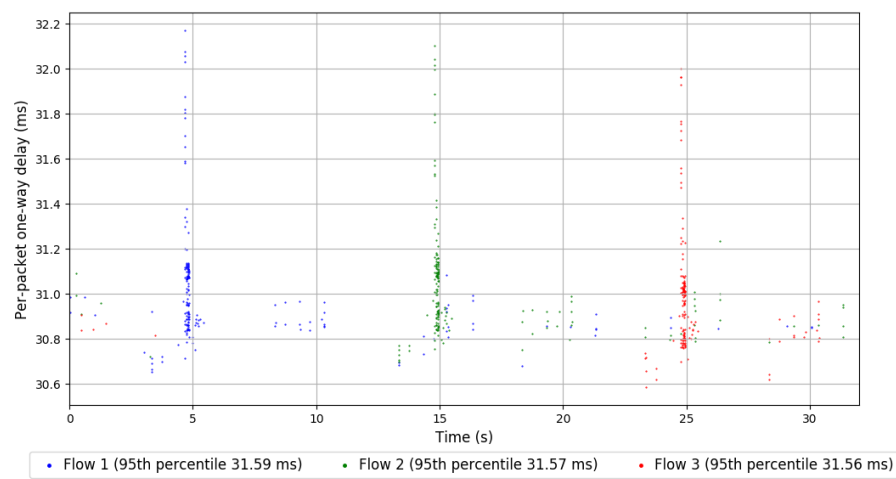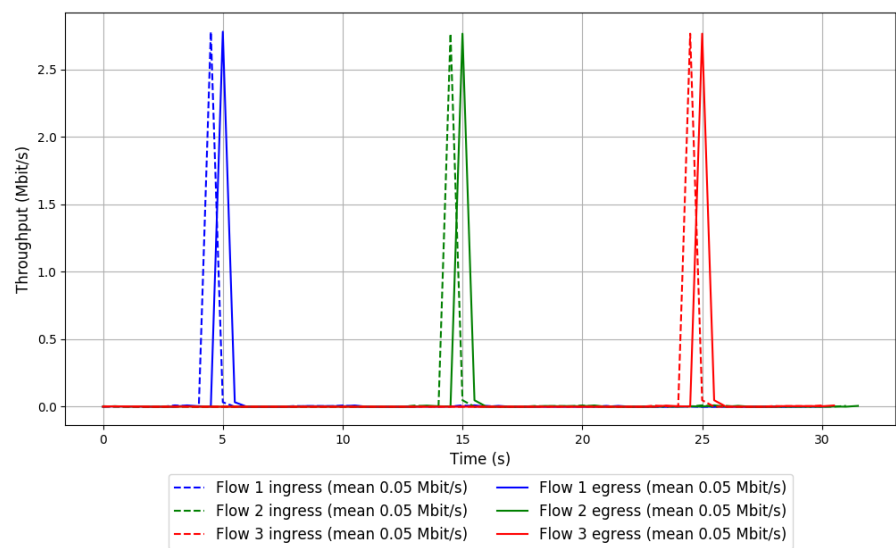Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2019-01-03 00:50:54
End at: 2019-01-03 00:51:24
Local clock offset: 0.162 ms
Remote clock offset: -3.059 ms


# Below is generated by plot.py at 2019-01-03 02:11:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 31.591 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.591 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.570 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.558 ms
Loss rate: 0.00%
```
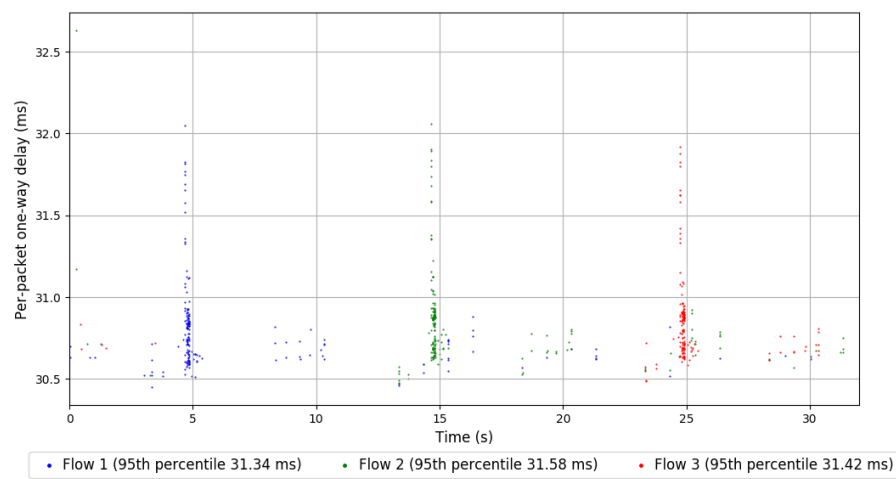
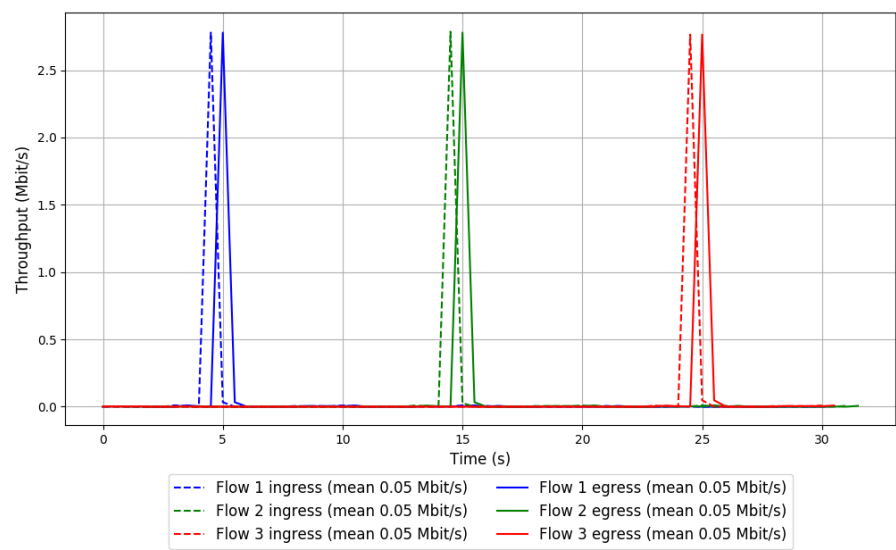Run 3: Report of WebRTC media — Data Link

```
Run 4: Statistics of WebRTC media

Start at: 2019-01-03 01:13:51
End at: 2019-01-03 01:14:21
Local clock offset: 0.305 ms
Remote clock offset: -2.986 ms


# Below is generated by plot.py at 2019-01-03 02:11:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 31.422 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.337 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.580 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.422 ms
Loss rate: 0.00%
```

Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2019-01-03 01:36:55
End at: 2019-01-03 01:37:25
Local clock offset: 0.209 ms
Remote clock offset: -2.609 ms


# Below is generated by plot.py at 2019-01-03 02:11:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 31.590 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.582 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.572 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 31.720 ms
Loss rate: 0.00%
```

Run 5: Report of WebRTC media — Data Link