Pantheon Report

Generated at 2018-06-05 10:58:51 (UTC).
Data path: AWS Brazil 2 Ethernet (local) → Colombia ppp0 ppp0 (remote).
Repeated the test of 16 congestion control schemes 3 times.
Each test lasted for 30 seconds running 3 flows with 10-second interval between two flows.
Increased UDP receive buffer to 16 MB (default) and 32 MB (max).
NTP offsets were measured against gps.ntp.br and have been applied to correct the timestamps in logs.

Git summary:
branch: master @ 227fdf9a3757f17b88537cceed5743a33037a3d2
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/genericCC @ c7966e494a929986eaa5a9c169a7f381fe1bbbe5
third_party/indigo @ 2601c92e4aa9d58d38dc4dfef0e0cbbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ 6f038ed31259d3666f9840f65b82cbe8f464b1b39
third_party/pcc @ 1a9c958f20d66d18b623c091a55fec872b4981e1
M receiver/src/buffer.h
M receiver/src/core.cpp
M sender/src/buffer.h
M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8ac08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc81436eb978f3cfe42
third_party/scream-reproduce @ f099118d1421aa3131bf5ff1964974e1da3b6b2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ c83869682f0c19f6baf92af3a596a406d4c1f
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 @ 2bf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9d8e4735770d143a1fa2851
test from AWS Brazil 2 to Colombia ppp0, 3 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)
<table>
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<th>mean avg tput (Mbit/s)</th>
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<td>1.08</td>
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<td>PCC-Vivace</td>
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<td>0.47</td>
<td>0.39</td>
<td>0.10</td>
</tr>
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</table>
Run 1: Statistics of TCP BBR

Start at: 2018-06-05 10:07:52
End at: 2018-06-05 10:08:22
Local clock offset: -5.559 ms
Remote clock offset: 8.453 ms

# Below is generated by plot.py at 2018-06-05 10:58:11
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.86 Mbit/s
  95th percentile per-packet one-way delay: 636.330 ms
  Loss rate: 10.35%
-- Flow 1:
  Average throughput: 1.91 Mbit/s
  95th percentile per-packet one-way delay: 627.238 ms
  Loss rate: 7.62%
-- Flow 2:
  Average throughput: 0.96 Mbit/s
  95th percentile per-packet one-way delay: 647.532 ms
  Loss rate: 12.71%
-- Flow 3:
  Average throughput: 1.02 Mbit/s
  95th percentile per-packet one-way delay: 702.447 ms
  Loss rate: 20.06%
Run 1: Report of TCP BBR — Data Link
Run 2: Statistics of TCP BBR

Start at: 2018-06-05 10:27:07
End at: 2018-06-05 10:27:37
Local clock offset: -7.359 ms
Remote clock offset: 4.632 ms

# Below is generated by plot.py at 2018-06-05 10:58:11
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.93 Mbit/s
  95th percentile per-packet one-way delay: 1228.194 ms
  Loss rate: 1.50%
-- Flow 1:
  Average throughput: 1.86 Mbit/s
  95th percentile per-packet one-way delay: 1209.997 ms
  Loss rate: 0.81%
-- Flow 2:
  Average throughput: 1.34 Mbit/s
  95th percentile per-packet one-way delay: 1248.547 ms
  Loss rate: 2.39%
-- Flow 3:
  Average throughput: 0.57 Mbit/s
  95th percentile per-packet one-way delay: 949.611 ms
  Loss rate: 4.14%
Run 2: Report of TCP BBR — Data Link

![Graph 1: Throughput (Mbps) over time](image1)

- Flow 1 ingress (mean 1.87 Mbps)
- Flow 1 egress (mean 1.86 Mbps)
- Flow 2 ingress (mean 1.36 Mbps)
- Flow 2 egress (mean 1.34 Mbps)
- Flow 3 ingress (mean 0.55 Mbps)
- Flow 3 egress (mean 0.57 Mbps)

![Graph 2: Per-packet one-way delay (ms) over time](image2)

- Flow 1 (95th percentile 1210.00 ms)
- Flow 2 (95th percentile 1248.55 ms)
- Flow 3 (95th percentile 949.61 ms)
Run 3: Statistics of TCP BBR

Start at: 2018-06-05 10:46:25
End at: 2018-06-05 10:46:55
Local clock offset: -6.437 ms
Remote clock offset: 14.101 ms

# Below is generated by plot.py at 2018-06-05 10:58:11
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.87 Mbit/s
  95th percentile per-packet one-way delay: 1088.246 ms
  Loss rate: 2.16%
-- Flow 1:
  Average throughput: 1.81 Mbit/s
  95th percentile per-packet one-way delay: 1076.371 ms
  Loss rate: 1.57%
-- Flow 2:
  Average throughput: 1.23 Mbit/s
  95th percentile per-packet one-way delay: 1105.305 ms
  Loss rate: 2.78%
-- Flow 3:
  Average throughput: 0.78 Mbit/s
  95th percentile per-packet one-way delay: 918.859 ms
  Loss rate: 4.38%
Run 3: Report of TCP BBR — Data Link
Run 1: Statistics of Copa

Start at: 2018-06-05 10:16:18
End at: 2018-06-05 10:16:48
Local clock offset: -7.304 ms
Remote clock offset: 1.293 ms

# Below is generated by plot.py at 2018-06-05 10:58:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.71 Mbit/s
95th percentile per-packet one-way delay: 224.309 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 1.34 Mbit/s
95th percentile per-packet one-way delay: 218.541 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 1.39 Mbit/s
95th percentile per-packet one-way delay: 212.452 ms
Loss rate: 0.09%
-- Flow 3:
Average throughput: 1.32 Mbit/s
95th percentile per-packet one-way delay: 239.497 ms
Loss rate: 0.09%
Run 1: Report of Copa — Data Link

![Graph 1: Throughput (Mbps)](image1)

- Flow 1 ingress (mean 1.34 Mbps)
- Flow 1 egress (mean 1.34 Mbps)
- Flow 2 ingress (mean 1.39 Mbps)
- Flow 2 egress (mean 1.39 Mbps)
- Flow 3 ingress (mean 1.32 Mbps)
- Flow 3 egress (mean 1.32 Mbps)

![Graph 2: One-Way Delay (ms)](image2)

- Flow 1 (95th percentile 218.54 ms)
- Flow 2 (95th percentile 212.45 ms)
- Flow 3 (95th percentile 239.50 ms)
Run 2: Statistics of Copa

Start at: 2018-06-05 10:35:34
End at: 2018-06-05 10:36:04
Local clock offset: -6.521 ms
Remote clock offset: 6.803 ms

# Below is generated by plot.py at 2018-06-05 10:58:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.58 Mbit/s
95th percentile per-packet one-way delay: 248.295 ms
Loss rate: 0.20%
-- Flow 1:
Average throughput: 1.43 Mbit/s
95th percentile per-packet one-way delay: 262.444 ms
Loss rate: 0.06%
-- Flow 2:
Average throughput: 1.32 Mbit/s
95th percentile per-packet one-way delay: 190.844 ms
Loss rate: 0.15%
-- Flow 3:
Average throughput: 0.83 Mbit/s
95th percentile per-packet one-way delay: 191.231 ms
Loss rate: 1.09%
Run 2: Report of Copa — Data Link
Run 3: Statistics of Copa

Start at: 2018-06-05 10:54:53
Local clock offset: -5.638 ms
Remote clock offset: 9.368 ms

# Below is generated by plot.py at 2018-06-05 10:58:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.39 Mbit/s
95th percentile per-packet one-way delay: 179.931 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 1.35 Mbit/s
95th percentile per-packet one-way delay: 173.179 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 1.06 Mbit/s
95th percentile per-packet one-way delay: 188.049 ms
Loss rate: 0.12%
-- Flow 3:
Average throughput: 1.00 Mbit/s
95th percentile per-packet one-way delay: 182.398 ms
Loss rate: 0.39%
Run 3: Report of Copa — Data Link

Throughput (Mbps)

Time (s)

Flow 1 ingress (mean 1.35 Mbit/s)  
Flow 1 egress (mean 1.35 Mbit/s)  
Flow 2 ingress (mean 1.05 Mbit/s)  
Flow 2 egress (mean 1.06 Mbit/s)  
Flow 3 ingress (mean 1.00 Mbit/s)  
Flow 3 egress (mean 1.00 Mbit/s)

Packet one-way delay (ms)

Flow 1 (95th percentile 173.18 ms)  
Flow 2 (95th percentile 188.05 ms)  
Flow 3 (95th percentile 182.40 ms)
Run 1: Statistics of TCP Cubic

Start at: 2018-06-05 10:09:04
End at: 2018-06-05 10:09:34
Local clock offset: -6.351 ms
Remote clock offset: 3.207 ms

# Below is generated by plot.py at 2018-06-05 10:58:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.34 Mbit/s
95th percentile per-packet one-way delay: 271.175 ms
Loss rate: 8.82%
-- Flow 1:
Average throughput: 1.56 Mbit/s
95th percentile per-packet one-way delay: 301.528 ms
Loss rate: 7.01%
-- Flow 2:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 201.094 ms
Loss rate: 8.70%
-- Flow 3:
Average throughput: 1.16 Mbit/s
95th percentile per-packet one-way delay: 191.786 ms
Loss rate: 15.58%
Run 1: Report of TCP Cubic — Data Link

![Graph showing throughput and delay over time for different flows.](image-url)
Run 2: Statistics of TCP Cubic

End at: 2018-06-05 10:28:50  
Local clock offset: -5.832 ms  
Remote clock offset: 9.017 ms

# Below is generated by plot.py at 2018-06-05 10:58:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.93 Mbit/s
95th percentile per-packet one-way delay: 567.554 ms
Loss rate: 19.13%
-- Flow 1:
Average throughput: 0.64 Mbit/s
95th percentile per-packet one-way delay: 428.122 ms
Loss rate: 14.23%
-- Flow 2:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 437.918 ms
Loss rate: 52.11%
-- Flow 3:
Average throughput: 0.83 Mbit/s
95th percentile per-packet one-way delay: 587.393 ms
Loss rate: 26.36%
Run 2: Report of TCP Cubic — Data Link

![Graph showing throughput and delay over time for different flows.](image-url)
Run 3: Statistics of TCP Cubic

Start at: 2018-06-05 10:47:37  
End at: 2018-06-05 10:48:07  
Local clock offset: -6.414 ms  
Remote clock offset: 14.169 ms

# Below is generated by plot.py at 2018-06-05 10:58:14  
# Datalink statistics

-- Total of 3 flows:
Average throughput: 2.80 Mbit/s  
95th percentile per-packet one-way delay: 2550.966 ms  
Loss rate: 11.57%

-- Flow 1:
Average throughput: 2.78 Mbit/s  
95th percentile per-packet one-way delay: 2550.989 ms  
Loss rate: 11.01%

-- Flow 2:
Average throughput: 0.03 Mbit/s  
95th percentile per-packet one-way delay: 2011.185 ms  
Loss rate: 49.32%

-- Flow 3:
Average throughput: 0.00 Mbit/s  
95th percentile per-packet one-way delay: 2571.160 ms  
Loss rate: 89.40%
Run 3: Report of TCP Cubic — Data Link

![Graph 1: Throughput vs. Time](image1)

![Graph 2: Per-packet one-way delay vs. Time](image2)
Run 1: Statistics of FillP

Start at: 2018-06-05 10:18:42
End at: 2018-06-05 10:19:12
Local clock offset: -6.486 ms
Remote clock offset: 0.963 ms

# Below is generated by plot.py at 2018-06-05 10:58:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.59 Mbit/s
95th percentile per-packet one-way delay: 2569.676 ms
Loss rate: 79.47%
-- Flow 1:
Average throughput: 2.01 Mbit/s
95th percentile per-packet one-way delay: 2502.511 ms
Loss rate: 77.74%
-- Flow 2:
Average throughput: 0.94 Mbit/s
95th percentile per-packet one-way delay: 2626.301 ms
Loss rate: 84.43%
-- Flow 3:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 2587.211 ms
Loss rate: 48.22%
Run 1: Report of FillP — Data Link

Throughput (Mbps)

Time (s)

Flow 1 ingress (mean 9.00 Mbps)  Flow 1 egress (mean 2.01 Mbps)
Flow 2 ingress (mean 5.28 Mbps)  Flow 2 egress (mean 0.94 Mbps)
Flow 3 ingress (mean 0.18 Mbps)  Flow 3 egress (mean 0.13 Mbps)

Per-packet one-way delay (ms)

Time (s)

Flow 1 (95th percentile 2502.51 ms)  Flow 2 (95th percentile 2626.30 ms)  Flow 3 (95th percentile 2587.21 ms)
Run 2: Statistics of FillP

Start at: 2018-06-05 10:38:00
End at: 2018-06-05 10:38:30
Local clock offset: -5.787 ms
Remote clock offset: 13.467 ms

# Below is generated by plot.py at 2018-06-05 10:58:25
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.65 Mbit/s
  95th percentile per-packet one-way delay: 2564.529 ms
  Loss rate: 82.76%
-- Flow 1:
  Average throughput: 2.09 Mbit/s
  95th percentile per-packet one-way delay: 2528.486 ms
  Loss rate: 81.88%
-- Flow 2:
  Average throughput: 0.96 Mbit/s
  95th percentile per-packet one-way delay: 2623.687 ms
  Loss rate: 85.41%
-- Flow 3:
  Average throughput: 0.02 Mbit/s
  95th percentile per-packet one-way delay: 2506.464 ms
  Loss rate: 81.39%
Run 2: Report of FillP — Data Link
Run 3: Statistics of FillP

Start at: 2018-06-05 10:57:17
End at: 2018-06-05 10:57:47
Local clock offset: -6.447 ms
Remote clock offset: 13.163 ms

# Below is generated by plot.py at 2018-06-05 10:58:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 4137.773 ms
Loss rate: 33.23%
-- Flow 1:
Average throughput: 0.64 Mbit/s
95th percentile per-packet one-way delay: 4032.116 ms
Loss rate: 24.38%
-- Flow 2:
Average throughput: 1.96 Mbit/s
95th percentile per-packet one-way delay: 4153.468 ms
Loss rate: 28.26%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 4392.257 ms
Loss rate: 99.01%
Run 3: Report of FillP — Data Link
Run 1: Statistics of Indigo

Start at: 2018-06-05 10:11:29
End at: 2018-06-05 10:11:59
Local clock offset: -6.406 ms
Remote clock offset: 1.829 ms

# Below is generated by plot.py at 2018-06-05 10:58:25
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 1.10 Mbit/s
  95th percentile per-packet one-way delay: 318.234 ms
  Loss rate: 87.05%
-- Flow 1:
  Average throughput: 0.71 Mbit/s
  95th percentile per-packet one-way delay: 229.839 ms
  Loss rate: 69.55%
-- Flow 2:
  Average throughput: 0.55 Mbit/s
  95th percentile per-packet one-way delay: 419.744 ms
  Loss rate: 93.96%
-- Flow 3:
  Average throughput: 0.08 Mbit/s
  95th percentile per-packet one-way delay: 228.203 ms
  Loss rate: 79.60%
Run 1: Report of Indigo — Data Link

![Graph 1: Throughput (Mbps) vs. Time (s)]

- Flow 1 ingress (mean 2.32 Mbps)
- Flow 1 egress (mean 0.71 Mbps)
- Flow 2 ingress (mean 9.05 Mbps)
- Flow 2 egress (mean 0.55 Mbps)
- Flow 3 ingress (mean 0.40 Mbps)
- Flow 3 egress (mean 0.08 Mbps)

![Graph 2: Per-packet one-way delay (ms) vs. Time (s)]

- Flow 1 (95th percentile 229.84 ms)
- Flow 2 (95th percentile 419.74 ms)
- Flow 3 (95th percentile 228.20 ms)
Run 2: Statistics of Indigo

Start at: 2018-06-05 10:30:44
End at: 2018-06-05 10:31:14
Local clock offset: -5.784 ms
Remote clock offset: 12.005 ms

# Below is generated by plot.py at 2018-06-05 10:58:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.44 Mbit/s
95th percentile per-packet one-way delay: 289.679 ms
Loss rate: 18.34%
-- Flow 1:
Average throughput: 0.99 Mbit/s
95th percentile per-packet one-way delay: 250.729 ms
Loss rate: 8.38%
-- Flow 2:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 369.593 ms
Loss rate: 30.02%
-- Flow 3:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 279.514 ms
Loss rate: 38.72%
Run 2: Report of Indigo — Data Link

[Graph showing throughput and per-packet one-way delay over time for three different flows, with data points indicating mean throughput and 95th percentile delay.]
Run 3: Statistics of Indigo

Start at: 2018-06-05 10:50:02
End at: 2018-06-05 10:50:32
Local clock offset: -6.412 ms
Remote clock offset: 12.019 ms

# Below is generated by plot.py at 2018-06-05 10:58:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.04 Mbit/s
95th percentile per-packet one-way delay: 875.371 ms
Loss rate: 42.11%
-- Flow 1:
Average throughput: 0.65 Mbit/s
95th percentile per-packet one-way delay: 1054.540 ms
Loss rate: 35.49%
-- Flow 2:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 306.343 ms
Loss rate: 49.20%
-- Flow 3:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 286.963 ms
Loss rate: 53.94%
Run 3: Report of Indigo — Data Link
Run 1: Statistics of LEDBAT

Start at: 2018-06-05 10:04:15
End at: 2018-06-05 10:04:45
Local clock offset: -6.19 ms
Remote clock offset: 9.151 ms

# Below is generated by plot.py at 2018-06-05 10:58:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.15 Mbit/s
95th percentile per-packet one-way delay: 254.090 ms
Loss rate: 5.45%
-- Flow 1:
Average throughput: 1.68 Mbit/s
95th percentile per-packet one-way delay: 254.080 ms
Loss rate: 2.76%
-- Flow 2:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 293.566 ms
Loss rate: 22.52%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 124.001 ms
Loss rate: 37.67%
Run 1: Report of LEDBAT — Data Link

![Graph 1: Throughput (Mbps)](0-30s)

- Blue dashed line: Flow 1 ingress (mean 1.29 Mbps)
- Blue solid line: Flow 1 egress (mean 1.68 Mbps)
- Green dashed line: Flow 2 ingress (mean 0.17 Mbps)
- Green solid line: Flow 2 egress (mean 0.14 Mbps)
- Red dashed line: Flow 3 ingress (mean 0.08 Mbps)
- Red solid line: Flow 3 egress (mean 0.05 Mbps)

![Graph 2: Per-packet one way delay (ms)](0-30s)

- Blue dotted line: Flow 1 (95th percentile 254.08 ms)
- Green dotted line: Flow 2 (95th percentile 293.57 ms)
- Red dotted line: Flow 3 (95th percentile 124.00 ms)
Run 2: Statistics of LEDBAT

End at: 2018-06-05 10:24:01
Local clock offset: -6.583 ms
Remote clock offset: 3.829 ms

# Below is generated by plot.py at 2018-06-05 10:58:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.58 Mbit/s
95th percentile per-packet one-way delay: 270.503 ms
Loss rate: 0.50%
-- Flow 1:
Average throughput: 2.02 Mbit/s
95th percentile per-packet one-way delay: 270.347 ms
Loss rate: 0.39%
-- Flow 2:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 279.914 ms
Loss rate: 0.39%
-- Flow 3:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 280.688 ms
Loss rate: 2.15%
Run 2: Report of LEDBAT — Data Link

![Graph of throughput vs. time for different flows]

**Graph Description:**
- **Y-axis:** Throughput (Mbps)
- **X-axis:** Time (s)
- **Legend:**
  - Flow 1 ingress (mean 2.02 Mbps)
  - Flow 1 egress (mean 2.02 Mbps)
  - Flow 2 ingress (mean 0.61 Mbps)
  - Flow 2 egress (mean 0.61 Mbps)
  - Flow 3 ingress (mean 0.50 Mbps)
  - Flow 3 egress (mean 0.49 Mbps)

![Graph of per-packet one-way delay vs. time for different flows]

**Graph Description:**
- **Y-axis:** Per-packet one-way delay (ms)
- **X-axis:** Time (s)
- **Legend:**
  - Flow 1 (95th percentile 270.35 ms)
  - Flow 2 (95th percentile 270.91 ms)
  - Flow 3 (95th percentile 280.69 ms)
Run 3: Statistics of LEDBAT

Start at: 2018-06-05 10:42:49
End at: 2018-06-05 10:43:19
Local clock offset: -6.456 ms
Remote clock offset: 13.842 ms

# Below is generated by plot.py at 2018-06-05 10:58:25
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.60 Mbit/s
  95th percentile per-packet one-way delay: 273.892 ms
  Loss rate: 0.70%
-- Flow 1:
  Average throughput: 2.07 Mbit/s
  95th percentile per-packet one-way delay: 264.156 ms
  Loss rate: 0.55%
-- Flow 2:
  Average throughput: 0.54 Mbit/s
  95th percentile per-packet one-way delay: 274.077 ms
  Loss rate: 1.19%
-- Flow 3:
  Average throughput: 0.52 Mbit/s
  95th percentile per-packet one-way delay: 283.566 ms
  Loss rate: 1.59%
Run 3: Report of LEDBAT — Data Link

![Graph of throughput and per-packet one-way delay](image)

**Throughput (Mbit/s)**
- Flow 1 ingress (mean 2.08 Mbit/s)
- Flow 1 egress (mean 2.07 Mbit/s)
- Flow 2 ingress (mean 0.54 Mbit/s)
- Flow 2 egress (mean 0.54 Mbit/s)
- Flow 3 ingress (mean 0.52 Mbit/s)
- Flow 3 egress (mean 0.52 Mbit/s)

**Per-packet one-way delay (ms)**
- Flow 1 (95th percentile 264.16 ms)
- Flow 2 (95th percentile 274.08 ms)
- Flow 3 (95th percentile 283.57 ms)
Run 1: Statistics of PCC-Allegro

Start at: 2018-06-05 10:10:17
End at: 2018-06-05 10:10:47
Local clock offset: -6.391 ms
Remote clock offset: 2.056 ms

# Below is generated by plot.py at 2018-06-05 10:58:25
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.55 Mbit/s
  95th percentile per-packet one-way delay: 2517.614 ms
  Loss rate: 26.69%
-- Flow 1:
  Average throughput: 1.50 Mbit/s
  95th percentile per-packet one-way delay: 2508.141 ms
  Loss rate: 23.06%
-- Flow 2:
  Average throughput: 1.57 Mbit/s
  95th percentile per-packet one-way delay: 2532.146 ms
  Loss rate: 31.32%
-- Flow 3:
  Average throughput: 0.00 Mbit/s
  95th percentile per-packet one-way delay: 2575.232 ms
  Loss rate: 28.84%
Run 1: Report of PCC-Allegro — Data Link

**Throughput (Mbps)**

- **Flow 1 ingress** (mean 1.94 Mbps)
- **Flow 1 egress** (mean 1.50 Mbps)
- **Flow 2 ingress** (mean 2.29 Mbps)
- **Flow 2 egress** (mean 1.57 Mbps)
- **Flow 3 ingress** (mean 0.00 Mbps)
- **Flow 3 egress** (mean 0.00 Mbps)

**Delay (ms)**

- **Flows 1, 2, and 3** (95th percentile: 2508.14 ms, 2532.13 ms, 2575.23 ms)
Run 2: Statistics of PCC-Allegro

Start at: 2018-06-05 10:29:32
End at: 2018-06-05 10:30:02
Local clock offset: -6.537 ms
Remote clock offset: 5.478 ms

# Below is generated by plot.py at 2018-06-05 10:58:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.50 Mbit/s
95th percentile per-packet one-way delay: 2520.319 ms
Loss rate: 47.21%
-- Flow 1:
Average throughput: 1.47 Mbit/s
95th percentile per-packet one-way delay: 2503.659 ms
Loss rate: 54.64%
-- Flow 2:
Average throughput: 1.54 Mbit/s
95th percentile per-packet one-way delay: 2532.533 ms
Loss rate: 31.07%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 2553.776 ms
Loss rate: 11.07%
Run 2: Report of PCC-Allegro — Data Link
Run 3: Statistics of PCC-Allegro

Start at: 2018-06-05 10:48:50
End at: 2018-06-05 10:49:20
Local clock offset: -6.429 ms
Remote clock offset: 13.086 ms

# Below is generated by plot.py at 2018-06-05 10:58:25
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.94 Mbit/s
  95th percentile per-packet one-way delay: 2372.133 ms
  Loss rate: 35.47%
-- Flow 1:
  Average throughput: 1.75 Mbit/s
  95th percentile per-packet one-way delay: 2365.722 ms
  Loss rate: 40.45%
-- Flow 2:
  Average throughput: 1.78 Mbit/s
  95th percentile per-packet one-way delay: 2378.745 ms
  Loss rate: 26.45%
-- Flow 3:
  Average throughput: 0.00 Mbit/s
  95th percentile per-packet one-way delay: 2343.992 ms
  Loss rate: 7.49%
Run 3: Report of PCC-Allegro — Data Link
Run 1: Statistics of PCC-Expr

End at: 2018-06-05 10:14:23
Local clock offset: -5.672 ms
Remote clock offset: 6.565 ms

# Below is generated by plot.py at 2018-06-05 10:58:30
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.74 Mbit/s
  95th percentile per-packet one-way delay: 3221.262 ms
  Loss rate: 55.34%
-- Flow 1:
  Average throughput: 2.74 Mbit/s
  95th percentile per-packet one-way delay: 3225.177 ms
  Loss rate: 55.34%
-- Flow 2:
  Average throughput: 0.00 Mbit/s
  95th percentile per-packet one-way delay: 2571.437 ms
  Loss rate: 29.90%
-- Flow 3:
  Average throughput: 0.00 Mbit/s
  95th percentile per-packet one-way delay: 2598.900 ms
  Loss rate: 83.22%
Run 1: Report of PCC-Expr — Data Link
Run 2: Statistics of PCC-Expr

Start at: 2018-06-05 10:33:09
End at: 2018-06-05 10:33:39
Local clock offset: -6.603 ms
Remote clock offset: 11.5 ms
Run 2: Report of PCC-Expr — Data Link

![Throughput vs Time Graph]

![Packet Delay vs Time Graph]

Legend:
- Flow 1 ingress (mean 23.00 Mbit/s)
- Flow 1 egress (mean 1.21 Mbit/s)
- Flow 2 ingress (mean 5.68 Mbit/s)
- Flow 2 egress (mean 1.30 Mbit/s)
- Flow 3 ingress (mean 0.00 Mbit/s)
- Flow 3 egress (mean 0.00 Mbit/s)

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Run 3: Statistics of PCC-Expr

Start at: 2018-06-05 10:52:29
End at: 2018-06-05 10:52:59
Local clock offset: -7.15 ms
Remote clock offset: 12.184 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.63 Mbit/s
95th percentile per-packet one-way delay: 2867.339 ms
Loss rate: 54.76%
-- Flow 1:
Average throughput: 2.63 Mbit/s
95th percentile per-packet one-way delay: 2867.349 ms
Loss rate: 54.76%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 2841.539 ms
Loss rate: 51.72%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 2802.871 ms
Loss rate: 59.97%
Run 3: Report of PCC-Expr — Data Link

![Graph 1](Image 1)

**Throughput (Mbps)**

- Flow 1 ingress (mean 5.79 Mbps)
- Flow 1 egress (mean 2.63 Mbps)
- Flow 2 ingress (mean 0.00 Mbps)
- Flow 2 egress (mean 0.00 Mbps)
- Flow 3 ingress (mean 0.00 Mbps)
- Flow 3 egress (mean 0.00 Mbps)

![Graph 2](Image 2)

**Per packet one-way delay (ms)**

- Flow 1 95th percentile 2867.35 ms
- Flow 2 95th percentile 2841.54 ms
- Flow 3 95th percentile 2802.87 ms
Run 1: Statistics of QUIC Cubic

Start at: 2018-06-05 10:15:05  
End at: 2018-06-05 10:15:35  
Local clock offset: -6.458 ms  
Remote clock offset: 2.465 ms  

# Below is generated by plot.py at 2018-06-05 10:58:49  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 2.42 Mbit/s  
95th percentile per-packet one-way delay: 1408.836 ms  
Loss rate: 5.66%  
-- Flow 1:  
Average throughput: 1.76 Mbit/s  
95th percentile per-packet one-way delay: 1396.860 ms  
Loss rate: 4.03%  
-- Flow 2:  
Average throughput: 0.85 Mbit/s  
95th percentile per-packet one-way delay: 1421.502 ms  
Loss rate: 7.68%  
-- Flow 3:  
Average throughput: 0.28 Mbit/s  
95th percentile per-packet one-way delay: 1495.619 ms  
Loss rate: 21.40%
Run 1: Report of QUIC Cubic — Data Link
Run 2: Statistics of QUIC Cubic

Start at: 2018-06-05 10:34:22
End at: 2018-06-05 10:34:52
Local clock offset: -5.77 ms
Remote clock offset: 10.593 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.96 Mbit/s
95th percentile per-packet one-way delay: 1451.313 ms
Loss rate: 5.41%
-- Flow 1:
Average throughput: 2.33 Mbit/s
95th percentile per-packet one-way delay: 1418.275 ms
Loss rate: 4.15%
-- Flow 2:
Average throughput: 0.70 Mbit/s
95th percentile per-packet one-way delay: 1453.658 ms
Loss rate: 6.20%
-- Flow 3:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 1522.152 ms
Loss rate: 19.68%
Run 2: Report of QUIC Cubic — Data Link
Run 3: Statistics of QUIC Cubic

Start at: 2018-06-05 10:53:41
End at: 2018-06-05 10:54:11
Local clock offset: -5.621 ms
Remote clock offset: 8.228 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.65 Mbit/s
95th percentile per-packet one-way delay: 1662.687 ms
Loss rate: 5.28%
-- Flow 1:
Average throughput: 2.10 Mbit/s
95th percentile per-packet one-way delay: 1532.089 ms
Loss rate: 4.00%
-- Flow 2:
Average throughput: 0.70 Mbit/s
95th percentile per-packet one-way delay: 1832.956 ms
Loss rate: 7.51%
-- Flow 3:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 2046.414 ms
Loss rate: 22.16%
Run 3: Report of QUIC Cubic — Data Link
Run 1: Statistics of SCReAM

Start at: 2018-06-05 10:17:30
End at: 2018-06-05 10:18:00
Local clock offset: -7.253 ms
Remote clock offset: 7.122 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.30 Mbit/s
  95th percentile per-packet one-way delay: 119.803 ms
  Loss rate: 0.09%
-- Flow 1:
  Average throughput: 0.08 Mbit/s
  95th percentile per-packet one-way delay: 109.727 ms
  Loss rate: 0.00%
-- Flow 2:
  Average throughput: 0.22 Mbit/s
  95th percentile per-packet one-way delay: 119.803 ms
  Loss rate: 0.00%
-- Flow 3:
  Average throughput: 0.22 Mbit/s
  95th percentile per-packet one-way delay: 123.965 ms
  Loss rate: 0.35%
Run 1: Report of SCReAM — Data Link
Run 2: Statistics of SCReAM

Start at: 2018-06-05 10:36:48
End at: 2018-06-05 10:37:18
Local clock offset: -7.28 ms
Remote clock offset: 10.913 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 117.206 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 116.870 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 117.201 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 127.278 ms
Loss rate: 0.00%
Run 2: Report of SCReAM — Data Link

![Graph showing throughput and per-packet one-way delay over time for different flows.]

- Flow 1 ingress (mean 0.22 Mb/s)
- Flow 1 egress (mean 0.22 Mb/s)
- Flow 2 ingress (mean 0.22 Mb/s)
- Flow 2 egress (mean 0.22 Mb/s)
- Flow 3 ingress (mean 0.22 Mb/s)
- Flow 3 egress (mean 0.22 Mb/s)
Run 3: Statistics of SCReAM

Start at: 2018-06-05 10:56:06
End at: 2018-06-05 10:56:36
Local clock offset: -5.608 ms
Remote clock offset: 8.216 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.29 Mbit/s
  95th percentile per-packet one-way delay: 111.984 ms
  Loss rate: 0.19%
-- Flow 1:
  Average throughput: 0.08 Mbit/s
  95th percentile per-packet one-way delay: 111.814 ms
  Loss rate: 0.13%
-- Flow 2:
  Average throughput: 0.21 Mbit/s
  95th percentile per-packet one-way delay: 112.013 ms
  Loss rate: 0.15%
-- Flow 3:
  Average throughput: 0.21 Mbit/s
  95th percentile per-packet one-way delay: 118.068 ms
  Loss rate: 0.34%
Run 3: Report of SCReAM — Data Link

![Graph 1: Throughput vs. Time for different flows.](image1)

![Graph 2: Delay vs. Time for different flows.](image2)
Run 1: Statistics of Sprout

Start at: 2018-06-05 10:12:41
End at: 2018-06-05 10:13:11
Local clock offset: -5.66 ms
Remote clock offset: 1.647 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
# Total of 3 flows:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 138.284 ms
Loss rate: 2.07%
-- Flow 1:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 147.330 ms
Loss rate: 1.99%
-- Flow 2:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 128.958 ms
Loss rate: 3.09%
-- Flow 3:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 147.458 ms
Loss rate: 0.52%
Run 1: Report of Sprout — Data Link
Run 2: Statistics of Sprout

Start at: 2018-06-05 10:31:57
End at: 2018-06-05 10:32:27
Local clock offset: -6.536 ms
Remote clock offset: 10.129 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 157.510 ms
Loss rate: 18.37%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 138.755 ms
Loss rate: 24.65%
-- Flow 2:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 169.116 ms
Loss rate: 16.60%
-- Flow 3:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 148.665 ms
Loss rate: 7.54%
Run 2: Report of Sprout — Data Link
Run 3: Statistics of Sprout

Start at: 2018-06-05 10:51:14
End at: 2018-06-05 10:51:44
Local clock offset: -6.392 ms
Remote clock offset: 13.192 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.38 Mbit/s
  95th percentile per-packet one-way delay: 143.212 ms
  Loss rate: 0.00%
-- Flow 1:
  Average throughput: 0.19 Mbit/s
  95th percentile per-packet one-way delay: 162.403 ms
  Loss rate: 0.00%
-- Flow 2:
  Average throughput: 0.19 Mbit/s
  95th percentile per-packet one-way delay: 133.605 ms
  Loss rate: 0.00%
-- Flow 3:
  Average throughput: 0.19 Mbit/s
  95th percentile per-packet one-way delay: 140.834 ms
  Loss rate: 0.00%
Run 3: Report of Sprout — Data Link

Graph 1: Throughput (Mbps)

Graph 2: Pre-packet one-way delay (ms)

Legend:
- Flow 1 ingress (mean 0.19 Mbps)
- Flow 1 egress (mean 0.19 Mbps)
- Flow 2 ingress (mean 0.19 Mbps)
- Flow 2 egress (mean 0.19 Mbps)
- Flow 3 ingress (mean 0.19 Mbps)
- Flow 3 egress (mean 0.19 Mbps)

Run 1: Statistics of TaoVA-100x

Start at: 2018-06-05 10:01:51
End at: 2018-06-05 10:02:21
Local clock offset: -5.434 ms
Remote clock offset: 3.369 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.80 Mbit/s
95th percentile per-packet one-way delay: 779.252 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 1.54 Mbit/s
95th percentile per-packet one-way delay: 638.084 ms
Loss rate: 0.31%
-- Flow 2:
Average throughput: 1.25 Mbit/s
95th percentile per-packet one-way delay: 934.018 ms
Loss rate: 0.72%
-- Flow 3:
Average throughput: 1.29 Mbit/s
95th percentile per-packet one-way delay: 945.433 ms
Loss rate: 2.01%
Run 1: Report of TaoVA-100x — Data Link
Run 2: Statistics of TaoVA-100x

Start at: 2018-06-05 10:21:06
End at: 2018-06-05 10:21:36
Local clock offset: -6.525 ms
Remote clock offset: 5.883 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.87 Mbit/s
  95th percentile per-packet one-way delay: 508.539 ms
  Loss rate: 0.94%
-- Flow 1:
  Average throughput: 1.61 Mbit/s
  95th percentile per-packet one-way delay: 430.300 ms
  Loss rate: 0.43%
-- Flow 2:
  Average throughput: 1.30 Mbit/s
  95th percentile per-packet one-way delay: 579.124 ms
  Loss rate: 1.04%
-- Flow 3:
  Average throughput: 1.18 Mbit/s
  95th percentile per-packet one-way delay: 461.091 ms
  Loss rate: 2.80%
Run 2: Report of TaoVA-100x — Data Link

![Throughput and delay graphs for different flows.]
Run 3: Statistics of TaoVA-100x

Start at: 2018-06-05 10:40:24
End at: 2018-06-05 10:40:54
Local clock offset: -6.532 ms
Remote clock offset: 11.439 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.72 Mbit/s
95th percentile per-packet one-way delay: 478.228 ms
Loss rate: 3.41%
-- Flow 1:
Average throughput: 1.57 Mbit/s
95th percentile per-packet one-way delay: 347.686 ms
Loss rate: 2.30%
-- Flow 2:
Average throughput: 1.35 Mbit/s
95th percentile per-packet one-way delay: 751.925 ms
Loss rate: 3.40%
-- Flow 3:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 474.187 ms
Loss rate: 8.31%
Run 3: Report of TaoVA-100x — Data Link

![Graph of throughput and packet delay over time](image1.png)

![Graph of packet delay over time](image2.png)
Run 1: Statistics of TCP Vegas

Start at: 2018-06-05 10:05:27
End at: 2018-06-05 10:05:57
Local clock offset: -6.24 ms
Remote clock offset: 2.771 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.64 Mbit/s
  95th percentile per-packet one-way delay: 276.192 ms
  Loss rate: 1.28%
-- Flow 1:
  Average throughput: 1.15 Mbit/s
  95th percentile per-packet one-way delay: 276.128 ms
  Loss rate: 2.39%
-- Flow 2:
  Average throughput: 1.63 Mbit/s
  95th percentile per-packet one-way delay: 286.138 ms
  Loss rate: 0.22%
-- Flow 3:
  Average throughput: 1.21 Mbit/s
  95th percentile per-packet one-way delay: 255.950 ms
  Loss rate: 0.89%
Run 1: Report of TCP Vegas — Data Link

![Graph showing throughput and packet loss over time for Run 1 with data points for each flow.](image-url)

- **Throughput (Mbps):**
  - Flow 1 ingress (mean 1.17 Mbps)
  - Flow 1 egress (mean 1.15 Mbps)
  - Flow 2 ingress (mean 1.03 Mbps)
  - Flow 2 egress (mean 1.03 Mbps)
  - Flow 3 ingress (mean 1.21 Mbps)
  - Flow 3 egress (mean 1.21 Mbps)

- **Packet Loss: (Percentage of packets dropped per time interval):**
  - Flow 1 (95th percentile 276.13 ms)
  - Flow 2 (95th percentile 286.14 ms)
  - Flow 3 (95th percentile 255.95 ms)
Run 2: Statistics of TCP Vegas

Start at: 2018-06-05 10:24:43
End at: 2018-06-05 10:25:13
Local clock offset: -5.758 ms
Remote clock offset: 3.52 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.85 Mbit/s
  95th percentile per-packet one-way delay: 638.895 ms
  Loss rate: 1.14%
-- Flow 1:
  Average throughput: 2.38 Mbit/s
  95th percentile per-packet one-way delay: 598.225 ms
  Loss rate: 0.85%
-- Flow 2:
  Average throughput: 0.44 Mbit/s
  95th percentile per-packet one-way delay: 659.275 ms
  Loss rate: 1.09%
-- Flow 3:
  Average throughput: 0.55 Mbit/s
  95th percentile per-packet one-way delay: 724.168 ms
  Loss rate: 4.98%
Run 2: Report of TCP Vegas — Data Link
Run 3: Statistics of TCP Vegas

Start at: 2018-06-05 10:44:01
End at: 2018-06-05 10:44:31
Local clock offset: -5.676 ms
Remote clock offset: 8.928 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.93 Mbit/s
  95th percentile per-packet one-way delay: 320.301 ms
  Loss rate: 0.19%
-- Flow 1:
  Average throughput: 1.87 Mbit/s
  95th percentile per-packet one-way delay: 299.976 ms
  Loss rate: 0.13%
-- Flow 2:
  Average throughput: 0.86 Mbit/s
  95th percentile per-packet one-way delay: 320.054 ms
  Loss rate: 0.14%
-- Flow 3:
  Average throughput: 1.48 Mbit/s
  95th percentile per-packet one-way delay: 340.558 ms
  Loss rate: 0.49%
Run 3: Report of TCP Vegas — Data Link
Run 1: Statistics of Verus

Start at: 2018-06-05 10:06:39
End at: 2018-06-05 10:07:09
Local clock offset: -7.101 ms
Remote clock offset: 2.55 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.93 Mbit/s
95th percentile per-packet one-way delay: 1453.613 ms
Loss rate: 4.31%
-- Flow 1:
Average throughput: 2.92 Mbit/s
95th percentile per-packet one-way delay: 1452.197 ms
Loss rate: 4.31%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1417.460 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1508.139 ms
Loss rate: 10.00%
Run 1: Report of Verus — Data Link

Throughput (Mbps)

Time (s)

Flow 1 ingress (mean 2.99 Mbit/s)  Flow 1 egress (mean 2.92 Mbit/s)
Flow 2 ingress (mean 0.01 Mbit/s)  Flow 2 egress (mean 0.01 Mbit/s)
Flow 3 ingress (mean 0.01 Mbit/s)  Flow 3 egress (mean 0.01 Mbit/s)

Per-packet round-trip delay (ms)

Time (s)

Flow 1 (95th percentile 1452.20 ms)  Flow 2 (95th percentile 1417.46 ms)  Flow 3 (95th percentile 1508.14 ms)
Run 2: Statistics of Verus

Start at: 2018-06-05 10:25:55
End at: 2018-06-05 10:26:25
Local clock offset: -6.583 ms
Remote clock offset: 9.093 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.82 Mbit/s
95th percentile per-packet one-way delay: 1587.818 ms
Loss rate: 2.37%
-- Flow 1:
Average throughput: 2.81 Mbit/s
95th percentile per-packet one-way delay: 1587.818 ms
Loss rate: 2.35%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1607.877 ms
Loss rate: 4.76%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1508.584 ms
Loss rate: 10.00%
Run 2: Report of Verus — Data Link

![Graph showing throughput over time for different flows.]

- Flow 1 ingress (mean 2.82 Mbit/s)
- Flow 1 egress (mean 2.81 Mbit/s)
- Flow 2 ingress (mean 0.01 Mbit/s)
- Flow 2 egress (mean 0.01 Mbit/s)
- Flow 3 ingress (mean 0.01 Mbit/s)
- Flow 3 egress (mean 0.01 Mbit/s)

![Graph showing per-packet delay over time for different flows.]

- Flow 1 95th percentile 1587.82 ms
- Flow 2 95th percentile 1607.88 ms
- Flow 3 95th percentile 1568.58 ms

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Run 3: Statistics of Verus

Start at: 2018-06-05 10:45:13
End at: 2018-06-05 10:45:43
Local clock offset: -6.43 ms
Remote clock offset: 12.998 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.23 Mbit/s
  95th percentile per-packet one-way delay: 1570.982 ms
  Loss rate: 4.18%
-- Flow 1:
  Average throughput: 2.22 Mbit/s
  95th percentile per-packet one-way delay: 1571.151 ms
  Loss rate: 4.17%
-- Flow 2:
  Average throughput: 0.01 Mbit/s
  95th percentile per-packet one-way delay: 1494.789 ms
  Loss rate: 4.55%
-- Flow 3:
  Average throughput: 0.02 Mbit/s
  95th percentile per-packet one-way delay: 1544.476 ms
  Loss rate: 9.09%
Run 3: Report of Verus — Data Link

![Graph showing throughput and packet delay over time for different flows.](image-url)
Run 1: Statistics of PCC-Vivace

Start at: 2018-06-05 10:03:03
End at: 2018-06-05 10:03:33
Local clock offset: -5.476 ms
Remote clock offset: 4.23 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.38 Mbit/s
95th percentile per-packet one-way delay: 2423.041 ms
Loss rate: 20.18%
-- Flow 1:
Average throughput: 1.20 Mbit/s
95th percentile per-packet one-way delay: 2398.889 ms
Loss rate: 16.06%
-- Flow 2:
Average throughput: 1.17 Mbit/s
95th percentile per-packet one-way delay: 2408.873 ms
Loss rate: 18.34%
-- Flow 3:
Average throughput: 1.20 Mbit/s
95th percentile per-packet one-way delay: 2457.141 ms
Loss rate: 33.15%
Run 1: Report of PCC-Vivace — Data Link
Run 2: Statistics of PCC-Vivace

Local clock offset: -6.516 ms  
Remote clock offset: 1.643 ms

# Below is generated by plot.py at 2018-06-05 10:58:49  
# Datalink statistics

-- Total of 3 flows:
Average throughput: 2.47 Mbit/s
95th percentile per-packet one-way delay: 2373.396 ms
Loss rate: 15.62%

-- Flow 1:
Average throughput: 1.16 Mbit/s
95th percentile per-packet one-way delay: 2357.138 ms
Loss rate: 12.06%

-- Flow 2:
Average throughput: 1.30 Mbit/s
95th percentile per-packet one-way delay: 2366.830 ms
Loss rate: 14.12%

-- Flow 3:
Average throughput: 1.36 Mbit/s
95th percentile per-packet one-way delay: 2391.846 ms
Loss rate: 26.01%
Run 2: Report of PCC-Vivace — Data Link
Run 3: Statistics of PCC-Vivace

Start at: 2018-06-05 10:41:36
End at: 2018-06-05 10:42:06
Local clock offset: -5.69 ms
Remote clock offset: 13.675 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.32 Mbit/s
  95th percentile per-packet one-way delay: 2750.096 ms
  Loss rate: 20.24%
-- Flow 1:
  Average throughput: 1.20 Mbit/s
  95th percentile per-packet one-way delay: 2683.241 ms
  Loss rate: 14.05%
-- Flow 2:
  Average throughput: 1.12 Mbit/s
  95th percentile per-packet one-way delay: 2711.538 ms
  Loss rate: 18.03%
-- Flow 3:
  Average throughput: 1.18 Mbit/s
  95th percentile per-packet one-way delay: 2852.287 ms
  Loss rate: 37.81%
Run 3: Report of PCC-Vivace — Data Link

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**Throughput (Mbps)**

- **Flow 1 ingress (mean 1.39 Mbps)**
- **Flow 1 egress (mean 1.20 Mbps)**
- **Flow 2 ingress (mean 1.36 Mbps)**
- **Flow 2 egress (mean 1.12 Mbps)**
- **Flow 3 ingress (mean 1.83 Mbps)**
- **Flow 3 egress (mean 1.18 Mbps)**

**One-way delay (ms)**

- **Flow 1 95th percentile 2683.24 ms**
- **Flow 2 95th percentile 2711.54 ms**
- **Flow 3 95th percentile 2852.29 ms**

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Run 1: Statistics of WebRTC media

Start at: 2018-06-05 10:00:39
End at: 2018-06-05 10:01:09
Local clock offset: -6.229 ms
Remote clock offset: 3.655 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 1.05 Mbit/s
  95th percentile per-packet one-way delay: 326.326 ms
  Loss rate: 0.10%
-- Flow 1:
  Average throughput: 0.56 Mbit/s
  95th percentile per-packet one-way delay: 396.007 ms
  Loss rate: 0.06%
-- Flow 2:
  Average throughput: 0.40 Mbit/s
  95th percentile per-packet one-way delay: 304.686 ms
  Loss rate: 0.06%
-- Flow 3:
  Average throughput: 0.09 Mbit/s
  95th percentile per-packet one-way delay: 316.155 ms
  Loss rate: 0.54%
Run 1: Report of WebRTC media — Data Link
Run 2: Statistics of WebRTC media

Start at: 2018-06-05 10:19:54
End at: 2018-06-05 10:20:24
Local clock offset: -6.502 ms
Remote clock offset: 5.862 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 256.928 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 257.160 ms
Loss rate: 0.04%
-- Flow 2:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 267.187 ms
Loss rate: 0.11%
-- Flow 3:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 228.386 ms
Loss rate: 0.39%
Run 2: Report of WebRTC media — Data Link
Run 3: Statistics of WebRTC media

Start at: 2018-06-05 10:39:12
End at: 2018-06-05 10:39:42
Local clock offset: -6.487 ms
Remote clock offset: 11.342 ms

# Below is generated by plot.py at 2018-06-05 10:58:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.11 Mbit/s
95th percentile per-packet one-way delay: 316.210 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 374.406 ms
Loss rate: 0.04%
-- Flow 2:
Average throughput: 0.51 Mbit/s
95th percentile per-packet one-way delay: 246.312 ms
Loss rate: 0.05%
-- Flow 3:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 266.064 ms
Loss rate: 0.64%
Run 3: Report of WebRTC media — Data Link

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**Throughput (Mbit/s)**

- **Flow 1 ingress (mean 0.50 Mbit/s)**
- **Flow 1 egress (mean 0.50 Mbit/s)**
- **Flow 2 ingress (mean 0.51 Mbit/s)**
- **Flow 2 egress (mean 0.51 Mbit/s)**
- **Flow 3 ingress (mean 0.11 Mbit/s)**
- **Flow 3 egress (mean 0.11 Mbit/s)**

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**Packet one-way delay (ms)**

- **Flow 1 (95th percentile 374.41 ms)**
- **Flow 2 (95th percentile 246.31 ms)**
- **Flow 3 (95th percentile 266.06 ms)**

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