Pantheon Report

Generated at 2018-08-10 00:47:36 (UTC).
Data path: India ppp0 ppp0 (remote) → AWS India 1 Ethernet (local).
Repeated the test of 17 congestion control schemes 3 times.
Each test lasted for 30 seconds running 3 flows with 10-second interval between two flows.
Increased UDP receive buffer to 16 MB (default) and 32 MB (max).
NTP offsets were measured against nets.org.sg and have been applied to correct the timestamps in logs.

Git summary:
branch: master @ 7772df3413f4b07ba0096dfddd8e9d4c6dca623e3
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf5e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0edbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaaab4a906ce6bb7c3cf
third_party/pantheon-tunnel @ 6f038ed31259d366f9840f65b82cbe8f464b1b39
third_party/pcc @ 1afc958fa0d6d66d8b623c091a55fec872b4981e1
  M receiver/src/buffer.h
  M receiver/src/core.cpp
  M sender/src/buffer.h
  M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08f9ab24f974ab
third_party/proto-quic @ 77961f1a8273a88642f1bc8143ebc978f3c942
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3db2
  M src/ScreamClient
  M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
third_party/verus @ d4b447ea74c660a261149af2629562939f9a494
  M src/verus.hpp
  M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
test from India ppp0 to AWS India 1, 3 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)
<table>
<thead>
<tr>
<th>scheme</th>
<th># runs</th>
<th>mean avg tput (Mbit/s)</th>
<th>mean 95th-%ile delay (ms)</th>
<th>mean loss rate (%)</th>
</tr>
</thead>
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<tr>
<td></td>
<td></td>
<td>flow 1</td>
<td>flow 2</td>
<td>flow 3</td>
</tr>
<tr>
<td>TCP BBR</td>
<td>3</td>
<td>1.53</td>
<td>0.83</td>
<td>0.91</td>
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<tr>
<td>Copa</td>
<td>3</td>
<td>1.42</td>
<td>0.95</td>
<td>0.56</td>
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<tr>
<td>TCP Cubic</td>
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<tr>
<td>FillP</td>
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<td>1.68</td>
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<tr>
<td>FillP-Sheep</td>
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<td>1.44</td>
<td>1.03</td>
<td>0.95</td>
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<tr>
<td>Indigo</td>
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<td>LEDBAT</td>
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<td>1.48</td>
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<td>PCC-Allegro</td>
<td>3</td>
<td>1.37</td>
<td>0.96</td>
<td>0.94</td>
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<tr>
<td>PCC-Expr</td>
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<td>1.31</td>
<td>1.31</td>
<td>0.64</td>
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<tr>
<td>QUIC Cubic</td>
<td>3</td>
<td>1.59</td>
<td>0.81</td>
<td>0.79</td>
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<td>SCReAM</td>
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<td>0.22</td>
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<tr>
<td>Sprout</td>
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<td>0.34</td>
<td>0.36</td>
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<tr>
<td>TaoVA-100x</td>
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<td>1.41</td>
<td>0.94</td>
<td>0.80</td>
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<td>TCP Vegas</td>
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<td>1.14</td>
<td>1.16</td>
<td>1.23</td>
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<tr>
<td>Verus</td>
<td>3</td>
<td>1.84</td>
<td>0.25</td>
<td>0.41</td>
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<tr>
<td>PCC-Vivace</td>
<td>3</td>
<td>1.08</td>
<td>0.86</td>
<td>0.80</td>
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<tr>
<td>WebRTC media</td>
<td>3</td>
<td>0.68</td>
<td>0.38</td>
<td>0.21</td>
</tr>
</tbody>
</table>

**Note:**
Run 1: Statistics of TCP BBR

Start at: 2018-08-09 23:54:52
End at: 2018-08-09 23:55:22
Local clock offset: 1.065 ms
Remote clock offset: -13.074 ms

# Below is generated by plot.py at 2018-08-10 00:46:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.26 Mbit/s
95th percentile per-packet one-way delay: 350.246 ms
Loss rate: 8.22%
-- Flow 1:
Average throughput: 1.52 Mbit/s
95th percentile per-packet one-way delay: 348.052 ms
Loss rate: 5.69%
-- Flow 2:
Average throughput: 0.65 Mbit/s
95th percentile per-packet one-way delay: 352.195 ms
Loss rate: 9.15%
-- Flow 3:
Average throughput: 0.95 Mbit/s
95th percentile per-packet one-way delay: 354.683 ms
Loss rate: 17.93%
Run 1: Report of TCP BBR — Data Link

[Graph showing throughput and packet delay over time for different flows]

Legend:
- Flow 1 ingress (mean 1.61 Mbit/s)
- Flow 1 egress (mean 1.52 Mbit/s)
- Flow 2 ingress (mean 0.71 Mbit/s)
- Flow 2 egress (mean 0.65 Mbit/s)
- Flow 3 ingress (mean 1.13 Mbit/s)
- Flow 3 egress (mean 0.55 Mbit/s)

[Graph showing packet delay over time for different flows]

Legend:
- Flow 1 (95th percentile 348.05 ms)
- Flow 2 (95th percentile 352.19 ms)
- Flow 3 (95th percentile 354.68 ms)
Run 2: Statistics of TCP BBR

Start at: 2018-08-10 00:13:27
End at: 2018-08-10 00:13:57
Local clock offset: -0.079 ms
Remote clock offset: -8.981 ms

# Below is generated by plot.py at 2018-08-10 00:46:56
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.47 Mbit/s
  95th percentile per-packet one-way delay: 340.590 ms
  Loss rate: 2.79%
-- Flow 1:
  Average throughput: 1.55 Mbit/s
  95th percentile per-packet one-way delay: 339.658 ms
  Loss rate: 1.93%
-- Flow 2:
  Average throughput: 1.00 Mbit/s
  95th percentile per-packet one-way delay: 342.216 ms
  Loss rate: 3.29%
-- Flow 3:
  Average throughput: 0.81 Mbit/s
  95th percentile per-packet one-way delay: 341.602 ms
  Loss rate: 6.46%
Run 2: Report of TCP BBR — Data Link

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

![Graph 2: Percent one-way delay (ms)](image2)
Run 3: Statistics of TCP BBR

Start at: 2018-08-10 00:32:01
End at: 2018-08-10 00:32:31
Local clock offset: -2.639 ms
Remote clock offset: -7.51 ms

# Below is generated by plot.py at 2018-08-10 00:46:57
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.39 Mbit/s
95th percentile per-packet one-way delay: 348.052 ms
Loss rate: 13.02%
-- Flow 1:
Average throughput: 1.52 Mbit/s
95th percentile per-packet one-way delay: 345.275 ms
Loss rate: 8.06%
-- Flow 2:
Average throughput: 0.84 Mbit/s
95th percentile per-packet one-way delay: 348.908 ms
Loss rate: 11.62%
-- Flow 3:
Average throughput: 0.98 Mbit/s
95th percentile per-packet one-way delay: 352.293 ms
Loss rate: 32.26%
Run 3: Report of TCP BBR — Data Link

![Graph showing throughput and round-trip time for different flows.](image-url)

- **Throughput (Mbps):**
  - Flow 1 ingress (mean 1.64 Mbps)
  - Flow 1 egress (mean 1.52 Mbps)
  - Flow 2 ingress (mean 0.94 Mbps)
  - Flow 2 egress (mean 0.84 Mbps)
  - Flow 3 ingress (mean 1.42 Mbps)
  - Flow 3 egress (mean 0.98 Mbps)

- **Round-Trip Time (ms):**
  - Flow 1 (95th percentile 345.27 ms)
  - Flow 2 (95th percentile 348.91 ms)
  - Flow 3 (95th percentile 352.29 ms)
Run 1: Statistics of Copa

Start at: 2018-08-09 23:59:15  
End at: 2018-08-09 23:59:45  
Local clock offset: 1.074 ms  
Remote clock offset: -12.08 ms

# Below is generated by plot.py at 2018-08-10 00:46:59  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 2.44 Mbit/s  
95th percentile per-packet one-way delay: 319.552 ms  
Loss rate: 0.58%  
-- Flow 1:  
Average throughput: 1.49 Mbit/s  
95th percentile per-packet one-way delay: 308.321 ms  
Loss rate: 0.36%  
-- Flow 2:  
Average throughput: 1.11 Mbit/s  
95th percentile per-packet one-way delay: 323.033 ms  
Loss rate: 0.51%  
-- Flow 3:  
Average throughput: 0.63 Mbit/s  
95th percentile per-packet one-way delay: 336.777 ms  
Loss rate: 2.35%
Run 2: Statistics of Copa

Start at: 2018-08-10 00:17:49
End at: 2018-08-10 00:18:19
Local clock offset: -0.89 ms
Remote clock offset: -10.282 ms

# Below is generated by plot.py at 2018-08-10 00:46:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.43 Mbit/s
95th percentile per-packet one-way delay: 305.078 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 1.53 Mbit/s
95th percentile per-packet one-way delay: 279.776 ms
Loss rate: 0.46%
-- Flow 2:
Average throughput: 1.09 Mbit/s
95th percentile per-packet one-way delay: 316.465 ms
Loss rate: 0.26%
-- Flow 3:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 329.343 ms
Loss rate: 3.35%
Run 2: Report of Copa — Data Link

![Graph 1: Throughput (Mbps)]

- **Flow 1 ingress (mean 1.53 Mbps)**
- **Flow 1 egress (mean 1.53 Mbps)**
- **Flow 2 ingress (mean 1.08 Mbps)**
- **Flow 2 egress (mean 1.09 Mbps)**
- **Flow 3 ingress (mean 0.55 Mbps)**
- **Flow 3 egress (mean 0.54 Mbps)**

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

- **Flow 1 (95th percentile 279.78 ms)**
- **Flow 2 (95th percentile 316.46 ms)**
- **Flow 3 (95th percentile 329.34 ms)**
Run 3: Statistics of Copa

Start at: 2018-08-10 00:36:24
End at: 2018-08-10 00:36:54
Local clock offset: -4.046 ms
Remote clock offset: -6.685 ms

# Below is generated by plot.py at 2018-08-10 00:46:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.83 Mbit/s
95th percentile per-packet one-way delay: 327.011 ms
Loss rate: 2.62%

-- Flow 1:
Average throughput: 1.23 Mbit/s
95th percentile per-packet one-way delay: 311.082 ms
Loss rate: 1.55%

-- Flow 2:
Average throughput: 0.66 Mbit/s
95th percentile per-packet one-way delay: 336.983 ms
Loss rate: 3.18%

-- Flow 3:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 343.264 ms
Loss rate: 8.71%
Run 3: Report of Copa — Data Link

![Graph showing network performance metrics over time]

- **Throughput (Mbps)**
  - Flow 1 ingress (mean 1.25 Mbps)
  - Flow 1 egress (mean 1.23 Mbps)
  - Flow 2 ingress (mean 0.67 Mbps)
  - Flow 2 egress (mean 0.66 Mbps)
  - Flow 3 ingress (mean 0.53 Mbps)
  - Flow 3 egress (mean 0.50 Mbps)

- **Round-trip delay (ms)**
  - Flow 1 (95th percentile 311.08 ms)
  - Flow 2 (95th percentile 336.98 ms)
  - Flow 3 (95th percentile 341.26 ms)
Run 1: Statistics of TCP Cubic

Start at: 2018-08-10 00:06:54
End at: 2018-08-10 00:07:24
Local clock offset: -0.557 ms
Remote clock offset: -10.636 ms

# Below is generated by plot.py at 2018-08-10 00:46:59
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.41 Mbit/s
  95th percentile per-packet one-way delay: 341.039 ms
  Loss rate: 2.87%
-- Flow 1:
  Average throughput: 1.60 Mbit/s
  95th percentile per-packet one-way delay: 340.854 ms
  Loss rate: 2.14%
-- Flow 2:
  Average throughput: 0.98 Mbit/s
  95th percentile per-packet one-way delay: 341.898 ms
  Loss rate: 3.24%
-- Flow 3:
  Average throughput: 0.51 Mbit/s
  95th percentile per-packet one-way delay: 345.348 ms
  Loss rate: 8.12%
Run 1: Report of TCP Cubic — Data Link
Run 2: Statistics of TCP Cubic

Start at: 2018-08-10 00:25:28
End at: 2018-08-10 00:25:59
Local clock offset: -1.197 ms
Remote clock offset: -7.947 ms

# Below is generated by plot.py at 2018-08-10 00:46:59
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.53 Mbit/s
  95th percentile per-packet one-way delay: 340.464 ms
  Loss rate: 2.17%
-- Flow 1:
  Average throughput: 1.67 Mbit/s
  95th percentile per-packet one-way delay: 335.860 ms
  Loss rate: 1.19%
-- Flow 2:
  Average throughput: 0.91 Mbit/s
  95th percentile per-packet one-way delay: 340.742 ms
  Loss rate: 3.93%
-- Flow 3:
  Average throughput: 0.81 Mbit/s
  95th percentile per-packet one-way delay: 340.749 ms
  Loss rate: 4.25%
Run 2: Report of TCP Cubic — Data Link

[Graph showing throughput over time for different flows]

[Graph showing packet delay over time for different flows]
Run 3: Statistics of TCP Cubic

Start at: 2018-08-10 00:44:04
End at: 2018-08-10 00:44:34
Local clock offset: -3.301 ms
Remote clock offset: -6.594 ms

# Below is generated by plot.py at 2018-08-10 00:46:59
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.10 Mbit/s
  95th percentile per-packet one-way delay: 344.354 ms
  Loss rate: 2.86%
-- Flow 1:
  Average throughput: 1.51 Mbit/s
  95th percentile per-packet one-way delay: 340.097 ms
  Loss rate: 1.78%
-- Flow 2:
  Average throughput: 0.75 Mbit/s
  95th percentile per-packet one-way delay: 344.896 ms
  Loss rate: 4.68%
-- Flow 3:
  Average throughput: 0.29 Mbit/s
  95th percentile per-packet one-way delay: 343.576 ms
  Loss rate: 9.65%
Run 3: Report of TCP Cubic — Data Link

![Graph showing throughput and packet delay over time for three flows.]

- **Throughput (Mbps)**: The blue dashed line represents Flow 1 ingress (mean 1.53 Mbps), the solid blue line represents Flow 1 egress (mean 1.51 Mbps), the green dashed line represents Flow 2 ingress (mean 0.79 Mbps), the green solid line represents Flow 2 egress (mean 0.75 Mbps), the red dashed line represents Flow 3 ingress (mean 0.32 Mbps), and the red solid line represents Flow 3 egress (mean 0.29 Mbps).

- **Packet Delay (ms)**: The blue dots represent Flow 1 (95th percentile 340.10 ms), the green dots represent Flow 2 (95th percentile 344.90 ms), and the red dots represent Flow 3 (95th percentile 343.58 ms).
Run 1: Statistics of FillP

Start at: 2018-08-09 23:52:41
End at: 2018-08-09 23:53:11
Local clock offset: 1.738 ms
Remote clock offset: -12.114 ms

# Below is generated by plot.py at 2018-08-10 00:47:02
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.38 Mbit/s
  95th percentile per-packet one-way delay: 357.045 ms
  Loss rate: 36.51%
-- Flow 1:
  Average throughput: 1.60 Mbit/s
  95th percentile per-packet one-way delay: 358.915 ms
  Loss rate: 40.21%
-- Flow 2:
  Average throughput: 0.81 Mbit/s
  95th percentile per-packet one-way delay: 354.081 ms
  Loss rate: 28.72%
-- Flow 3:
  Average throughput: 0.80 Mbit/s
  95th percentile per-packet one-way delay: 352.372 ms
  Loss rate: 24.42%
Run 1: Report of FillP — Data Link

- Throughput (Mbps):
  - Flow 1 ingress (mean 2.66 Mbps)
  - Flow 1 egress (mean 1.60 Mbps)
  - Flow 2 ingress (mean 1.12 Mbps)
  - Flow 2 egress (mean 0.81 Mbps)
  - Flow 3 ingress (mean 1.02 Mbps)
  - Flow 3 egress (mean 0.80 Mbps)

- Packet one-way delay (ms):
  - Flow 1 (95th percentile 358.92 ms)
  - Flow 2 (95th percentile 354.08 ms)
  - Flow 3 (95th percentile 352.37 ms)
Run 2: Statistics of FillP

Start at: 2018-08-10 00:11:16
End at: 2018-08-10 00:11:46
Local clock offset: 0.377 ms
Remote clock offset: -10.18 ms

# Below is generated by plot.py at 2018-08-10 00:47:03
# Datalink statistics
  -- Total of 3 flows:
    Average throughput: 2.27 Mbit/s
    95th percentile per-packet one-way delay: 355.871 ms
    Loss rate: 39.14%
  -- Flow 1:
    Average throughput: 1.69 Mbit/s
    95th percentile per-packet one-way delay: 356.322 ms
    Loss rate: 39.59%
  -- Flow 2:
    Average throughput: 0.68 Mbit/s
    95th percentile per-packet one-way delay: 354.365 ms
    Loss rate: 34.67%
  -- Flow 3:
    Average throughput: 0.46 Mbit/s
    95th percentile per-packet one-way delay: 352.366 ms
    Loss rate: 46.11%
Run 2: Report of FillP — Data Link

![Graph 1: Throughput (Mbps/s)]

![Graph 2: Percent one way delay (ms)]

Legend:
- Flow 1 ingress (mean 2.79 Mbps/s)
- Flow 1 egress (mean 1.69 Mbps/s)
- Flow 2 ingress (mean 1.02 Mbps/s)
- Flow 2 egress (mean 0.66 Mbps/s)
- Flow 3 ingress (mean 0.77 Mbps/s)
- Flow 3 egress (mean 0.46 Mbps/s)
Run 3: Statistics of FillP

Start at: 2018-08-10 00:29:51
End at: 2018-08-10 00:30:21
Local clock offset: 0.097 ms
Remote clock offset: -8.38 ms

# Below is generated by plot.py at 2018-08-10 00:47:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.44 Mbit/s
95th percentile per-packet one-way delay: 357.875 ms
Loss rate: 36.82%
-- Flow 1:
Average throughput: 1.74 Mbit/s
95th percentile per-packet one-way delay: 359.181 ms
Loss rate: 38.02%
-- Flow 2:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 357.081 ms
Loss rate: 41.16%
-- Flow 3:
Average throughput: 1.10 Mbit/s
95th percentile per-packet one-way delay: 357.193 ms
Loss rate: 24.13%
Run 3: Report of FillP — Data Link

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

- Flow 1 ingress (mean 2.81 Mbit/s)
- Flow 1 egress (mean 1.74 Mbit/s)
- Flow 2 ingress (mean 0.86 Mbit/s)
- Flow 2 egress (mean 0.53 Mbit/s)
- Flow 3 ingress (mean 1.40 Mbit/s)
- Flow 3 egress (mean 1.10 Mbit/s)

![Graph 2: Round-trip time (ms)](image2)

- Flow 1 (95th percentile 359.18 ms)
- Flow 2 (95th percentile 357.08 ms)
- Flow 3 (95th percentile 357.19 ms)
Run 1: Statistics of FillP-Sheep

Start at: 2018-08-09 23:55:57
End at: 2018-08-09 23:56:27
Local clock offset: 0.655 ms
Remote clock offset: -11.945 ms

# Below is generated by plot.py at 2018-08-10 00:47:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.50 Mbit/s
95th percentile per-packet one-way delay: 350.286 ms
Loss rate: 26.14%
-- Flow 1:
Average throughput: 1.55 Mbit/s
95th percentile per-packet one-way delay: 348.481 ms
Loss rate: 14.70%
-- Flow 2:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 351.264 ms
Loss rate: 30.94%
-- Flow 3:
Average throughput: 0.88 Mbit/s
95th percentile per-packet one-way delay: 355.296 ms
Loss rate: 53.30%
Run 1: Report of FillP-Sheep — Data Link
Run 2: Statistics of FillP-Sheep

Start at: 2018-08-10 00:14:33
End at: 2018-08-10 00:15:03
Local clock offset: -1.262 ms
Remote clock offset: -9.232 ms

# Below is generated by plot.py at 2018-08-10 00:47:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.48 Mbit/s
95th percentile per-packet one-way delay: 351.203 ms
Loss rate: 32.81%
-- Flow 1:
Average throughput: 1.46 Mbit/s
95th percentile per-packet one-way delay: 348.610 ms
Loss rate: 22.43%
-- Flow 2:
Average throughput: 1.10 Mbit/s
95th percentile per-packet one-way delay: 353.023 ms
Loss rate: 37.35%
-- Flow 3:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 353.190 ms
Loss rate: 54.86%
Run 2: Report of FillP-Sheep — Data Link

![Graph showing network performance metrics over time for different flows and data ingress/egress.](image-url)
Run 3: Statistics of FillP-Sheep

Start at: 2018-08-10 00:33:07
End at: 2018-08-10 00:33:37
Local clock offset: -1.582 ms
Remote clock offset: -8.145 ms

# Below is generated by plot.py at 2018-08-10 00:47:07
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.29 Mbit/s
  95th percentile per-packet one-way delay: 352.908 ms
  Loss rate: 37.24%
-- Flow 1:
  Average throughput: 1.30 Mbit/s
  95th percentile per-packet one-way delay: 349.548 ms
  Loss rate: 21.55%
-- Flow 2:
  Average throughput: 0.97 Mbit/s
  95th percentile per-packet one-way delay: 353.694 ms
  Loss rate: 38.28%
-- Flow 3:
  Average throughput: 1.06 Mbit/s
  95th percentile per-packet one-way delay: 359.227 ms
  Loss rate: 63.75%
Run 3: Report of FillP-Sheep — Data Link

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

- Flow 1 ingress (mean 1.66 Mbit/s)
- Flow 1 egress (mean 1.30 Mbit/s)
- Flow 2 ingress (mean 1.57 Mbit/s)
- Flow 2 egress (mean 0.97 Mbit/s)
- Flow 3 ingress (mean 2.84 Mbit/s)
- Flow 3 egress (mean 1.06 Mbit/s)

![Graph showing one-way delay over time for different flows.]

- Flow 1 (95th percentile 349.55 ms)
- Flow 2 (95th percentile 353.69 ms)
- Flow 3 (95th percentile 359.23 ms)
Run 1: Statistics of Indigo

Start at: 2018-08-10 00:05:48
End at: 2018-08-10 00:06:18
Local clock offset: 0.516 ms
Remote clock offset: -11.97 ms

# Below is generated by plot.py at 2018-08-10 00:47:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.40 Mbit/s
95th percentile per-packet one-way delay: 139.413 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 1.40 Mbit/s
95th percentile per-packet one-way delay: 123.799 ms
Loss rate: 0.20%
-- Flow 2:
Average throughput: 1.11 Mbit/s
95th percentile per-packet one-way delay: 151.388 ms
Loss rate: 1.35%
-- Flow 3:
Average throughput: 0.81 Mbit/s
95th percentile per-packet one-way delay: 170.552 ms
Loss rate: 0.90%
Run 1: Report of Indigo — Data Link
Run 2: Statistics of Indigo

Start at: 2018-08-10 00:24:23
End at: 2018-08-10 00:24:53
Local clock offset: 0.879 ms
Remote clock offset: -8.281 ms

# Below is generated by plot.py at 2018-08-10 00:47:07
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.30 Mbit/s
  95th percentile per-packet one-way delay: 173.000 ms
  Loss rate: 0.66%
-- Flow 1:
  Average throughput: 1.14 Mbit/s
  95th percentile per-packet one-way delay: 162.901 ms
  Loss rate: 0.11%
-- Flow 2:
  Average throughput: 1.16 Mbit/s
  95th percentile per-packet one-way delay: 177.852 ms
  Loss rate: 0.37%
-- Flow 3:
  Average throughput: 1.21 Mbit/s
  95th percentile per-packet one-way delay: 192.242 ms
  Loss rate: 2.78%
Run 2: Report of Indigo — Data Link

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

- **Flow 1**: Mean throughput 1.14 Mbit/s, Mean egress 1.14 Mbit/s
- **Flow 2**: Mean throughput 1.15 Mbit/s, Mean egress 1.16 Mbit/s
- **Flow 3**: Mean throughput 1.23 Mbit/s, Mean egress 1.21 Mbit/s

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

- **Flow 1**: 95th percentile delay 162.90 ms
- **Flow 2**: 95th percentile delay 177.85 ms
- **Flow 3**: 95th percentile delay 192.24 ms
Run 3: Statistics of Indigo

Start at: 2018-08-10 00:42:58
End at: 2018-08-10 00:43:28
Local clock offset: -3.062 ms
Remote clock offset: -6.616 ms

# Below is generated by plot.py at 2018-08-10 00:47:08
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.00 Mbit/s
  95th percentile per-packet one-way delay: 158.823 ms
  Loss rate: 2.23%

-- Flow 1:
  Average throughput: 0.97 Mbit/s
  95th percentile per-packet one-way delay: 158.718 ms
  Loss rate: 3.82%

-- Flow 2:
  Average throughput: 0.98 Mbit/s
  95th percentile per-packet one-way delay: 153.473 ms
  Loss rate: 0.49%

-- Flow 3:
  Average throughput: 1.18 Mbit/s
  95th percentile per-packet one-way delay: 172.225 ms
  Loss rate: 1.04%
Run 3: Report of Indigo — Data Link

![Graph showing network performance metrics over time](image-url)

- **Throughput (Mbps):**
  - Flow 1 ingress (mean 1.00 Mbps)
  - Flow 1 egress (mean 0.97 Mbps)
  - Flow 2 ingress (mean 0.98 Mbps)
  - Flow 2 egress (mean 0.98 Mbps)
  - Flow 3 ingress (mean 1.17 Mbps)
  - Flow 3 egress (mean 1.18 Mbps)

- **Delay (ms):**
  - Flow 1 (95th percentile 158.72 ms)
  - Flow 2 (95th percentile 153.47 ms)
  - Flow 3 (95th percentile 172.22 ms)
Run 1: Statistics of LEDBAT

Start at: 2018-08-09 23:57:03
End at: 2018-08-09 23:57:34
Local clock offset: -0.675 ms
Remote clock offset: -12.911 ms

# Below is generated by plot.py at 2018-08-10 00:47:09
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.49 Mbit/s
  95th percentile per-packet one-way delay: 285.461 ms
  Loss rate: 0.73%
-- Flow 1:
  Average throughput: 1.30 Mbit/s
  95th percentile per-packet one-way delay: 234.623 ms
  Loss rate: 0.03%
-- Flow 2:
  Average throughput: 1.45 Mbit/s
  95th percentile per-packet one-way delay: 290.571 ms
  Loss rate: 0.82%
-- Flow 3:
  Average throughput: 0.75 Mbit/s
  95th percentile per-packet one-way delay: 304.687 ms
  Loss rate: 3.98%
Run 1: Report of LEDBAT — Data Link
Run 2: Statistics of LEDEBAT

Start at: 2018-08-10 00:15:38
End at: 2018-08-10 00:16:08
Local clock offset: 1.527 ms
Remote clock offset: -10.0 ms

# Below is generated by plot.py at 2018-08-10 00:47:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.43 Mbit/s
95th percentile per-packet one-way delay: 246.836 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 1.26 Mbit/s
95th percentile per-packet one-way delay: 227.494 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 1.48 Mbit/s
95th percentile per-packet one-way delay: 252.135 ms
Loss rate: 1.11%
-- Flow 3:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 287.905 ms
Loss rate: 3.74%
Run 2: Report of LEDBAT — Data Link

Throughput (Mbps)

Flow 1 ingress (mean 1.26 Mbps)  Flow 1 egress (mean 1.26 Mbps)
Flow 2 ingress (mean 1.48 Mbps)  Flow 2 egress (mean 1.48 Mbps)
Flow 3 ingress (mean 0.60 Mbps)  Flow 3 egress (mean 0.59 Mbps)

Round-trip delay (ms)

Flow 1 (95th percentile 227.49 ms)  Flow 2 (95th percentile 252.13 ms)  Flow 3 (95th percentile 287.90 ms)
Run 3: Statistics of LEDBAT

Start at: 2018-08-10 00:34:13
End at: 2018-08-10 00:34:43
Local clock offset: -2.584 ms
Remote clock offset: -6.924 ms

# Below is generated by plot.py at 2018-08-10 00:47:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.30 Mbit/s
95th percentile per-packet one-way delay: 291.566 ms
Loss rate: 0.96%
-- Flow 1:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 227.357 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 1.51 Mbit/s
95th percentile per-packet one-way delay: 301.210 ms
Loss rate: 1.43%
-- Flow 3:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 307.565 ms
Loss rate: 3.93%
Run 3: Report of LEDBAT — Data Link
Run 1: Statistics of PCC-Allegro

Start at: 2018-08-10 00:02:32
End at: 2018-08-10 00:03:02
Local clock offset: 1.352 ms
Remote clock offset: -12.461 ms

# Below is generated by plot.py at 2018-08-10 00:47:12
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.39 Mbit/s
  95th percentile per-packet one-way delay: 362.938 ms
  Loss rate: 56.23%
-- Flow 1:
  Average throughput: 1.43 Mbit/s
  95th percentile per-packet one-way delay: 356.358 ms
  Loss rate: 38.98%
-- Flow 2:
  Average throughput: 0.98 Mbit/s
  95th percentile per-packet one-way delay: 361.371 ms
  Loss rate: 56.23%
-- Flow 3:
  Average throughput: 0.96 Mbit/s
  95th percentile per-packet one-way delay: 805.039 ms
  Loss rate: 81.18%
Run 1: Report of PCC-Allegro — Data Link

![Graph of throughput and packet delay over time for different flows.]

- **Throughput:**
  - Flow 1 ingress (mean 2.34 Mbit/s)
  - Flow 1 egress (mean 1.34 Mbit/s)
  - Flow 2 ingress (mean 2.24 Mbit/s)
  - Flow 2 egress (mean 0.98 Mbit/s)
  - Flow 3 ingress (mean 4.92 Mbit/s)
  - Flow 3 egress (mean 0.96 Mbit/s)

- **Packet Delay:**
  - Flow 1 (95th percentile 356.36 ms)
  - Flow 2 (95th percentile 361.37 ms)
  - Flow 3 (95th percentile 805.04 ms)
Run 2: Statistics of PCC-Allegro

Start at: 2018-08-10 00:21:06
End at: 2018-08-10 00:21:36
Local clock offset: 0.119 ms
Remote clock offset: -8.977 ms

# Below is generated by plot.py at 2018-08-10 00:47:12
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.33 Mbit/s
  95th percentile per-packet one-way delay: 365.146 ms
  Loss rate: 56.03%
-- Flow 1:
  Average throughput: 1.40 Mbit/s
  95th percentile per-packet one-way delay: 355.717 ms
  Loss rate: 37.17%
-- Flow 2:
  Average throughput: 0.92 Mbit/s
  95th percentile per-packet one-way delay: 358.710 ms
  Loss rate: 56.50%
-- Flow 3:
  Average throughput: 0.99 Mbit/s
  95th percentile per-packet one-way delay: 789.754 ms
  Loss rate: 81.07%
Run 2: Report of PCC-Allegro — Data Link

![Throughput Chart]

- Flow 1 ingress (mean 2.23 Mbit/s)
- Flow 1 egress (mean 1.40 Mbit/s)
- Flow 2 ingress (mean 2.11 Mbit/s)
- Flow 2 egress (mean 0.92 Mbit/s)
- Flow 3 ingress (mean 5.02 Mbit/s)
- Flow 3 egress (mean 0.99 Mbit/s)

![Delay Chart]

- Flow 1 (95th percentile 355.72 ms)
- Flow 2 (95th percentile 358.71 ms)
- Flow 3 (95th percentile 789.75 ms)
Run 3: Statistics of PCC-Allegro

Start at: 2018-08-10 00:39:41
End at: 2018-08-10 00:40:11
Local clock offset: 0.746 ms
Remote clock offset: -7.04 ms

# Below is generated by plot.py at 2018-08-10 00:47:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.20 Mbit/s
95th percentile per-packet one-way delay: 369.914 ms
Loss rate: 58.10%
-- Flow 1:
Average throughput: 1.29 Mbit/s
95th percentile per-packet one-way delay: 356.104 ms
Loss rate: 37.57%
-- Flow 2:
Average throughput: 0.98 Mbit/s
95th percentile per-packet one-way delay: 363.990 ms
Loss rate: 59.21%
-- Flow 3:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 784.220 ms
Loss rate: 83.37%
Run 3: Report of PCC-Allegro — Data Link

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

- Flow 1 ingress (mean 2.05 Mbit/s)
- Flow 1 egress (mean 1.29 Mbit/s)
- Flow 2 ingress (mean 2.39 Mbit/s)
- Flow 2 egress (mean 0.98 Mbit/s)
- Flow 3 ingress (mean 4.85 Mbit/s)
- Flow 3 egress (mean 0.86 Mbit/s)
Run 1: Statistics of PCC-Expr

Start at: 2018-08-09 23:58:09
End at: 2018-08-09 23:58:39
Local clock offset: 1.055 ms
Remote clock offset: -12.815 ms

# Below is generated by plot.py at 2018-08-10 00:47:21
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.52 Mbit/s
  95th percentile per-packet one-way delay: 360.312 ms
  Loss rate: 64.81%
-- Flow 1:
  Average throughput: 1.27 Mbit/s
  95th percentile per-packet one-way delay: 358.328 ms
  Loss rate: 57.20%
-- Flow 2:
  Average throughput: 1.36 Mbit/s
  95th percentile per-packet one-way delay: 359.294 ms
  Loss rate: 66.15%
-- Flow 3:
  Average throughput: 1.35 Mbit/s
  95th percentile per-packet one-way delay: 452.807 ms
  Loss rate: 77.22%
Run 1: Report of PCC-Expr — Data Link

Graph 1: Throughput (Mbps)
- Flow 1 ingress (mean 2.97 Mbps)
- Flow 1 egress (mean 1.27 Mbps)
- Flow 2 ingress (mean 3.96 Mbps)
- Flow 2 egress (mean 1.36 Mbps)
- Flow 3 ingress (mean 4.64 Mbps)
- Flow 3 egress (mean 1.35 Mbps)

Graph 2: Per-packet one-way delay (ms)
- Flow 1 (95th percentile 358.33 ms)
- Flow 2 (95th percentile 359.29 ms)
- Flow 3 (95th percentile 452.81 ms)
Run 2: Statistics of PCC-Expr

Start at: 2018-08-10 00:16:44
End at: 2018-08-10 00:17:14
Local clock offset: -2.765 ms
Remote clock offset: -9.53 ms

# Below is generated by plot.py at 2018-08-10 00:47:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.53 Mbit/s
95th percentile per-packet one-way delay: 354.854 ms
Loss rate: 52.88%
-- Flow 1:
Average throughput: 1.50 Mbit/s
95th percentile per-packet one-way delay: 355.002 ms
Loss rate: 49.65%
-- Flow 2:
Average throughput: 1.55 Mbit/s
95th percentile per-packet one-way delay: 354.472 ms
Loss rate: 56.91%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 341.574 ms
Loss rate: 84.62%
Run 2: Report of PCC-Expr — Data Link
Run 3: Statistics of PCC-Expr

Start at: 2018-08-10 00:35:18
End at: 2018-08-10 00:35:48
Local clock offset: -1.385 ms
Remote clock offset: -7.074 ms

# Below is generated by plot.py at 2018-08-10 00:47:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 378.223 ms
Loss rate: 82.79%
-- Flow 1:
Average throughput: 1.16 Mbit/s
95th percentile per-packet one-way delay: 359.644 ms
Loss rate: 72.71%
-- Flow 2:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 464.567 ms
Loss rate: 85.16%
-- Flow 3:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 359.940 ms
Loss rate: 93.88%
Run 3: Report of PCC-Expr — Data Link
Run 1: Statistics of QUIC Cubic

Start at: 2018-08-09 23:53:46
End at: 2018-08-09 23:54:16
Local clock offset: -1.589 ms
Remote clock offset: -12.783 ms

# Below is generated by plot.py at 2018-08-10 00:47:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.36 Mbit/s
95th percentile per-packet one-way delay: 346.638 ms
Loss rate: 6.77%
-- Flow 1:
Average throughput: 1.54 Mbit/s
95th percentile per-packet one-way delay: 345.541 ms
Loss rate: 5.34%
-- Flow 2:
Average throughput: 0.87 Mbit/s
95th percentile per-packet one-way delay: 346.813 ms
Loss rate: 7.69%
-- Flow 3:
Average throughput: 0.76 Mbit/s
95th percentile per-packet one-way delay: 349.402 ms
Loss rate: 13.08%
Run 1: Report of QUIC Cubic — Data Link

![Throughput Graph]

![Packet Delay Graph]
Run 2: Statistics of QUIC Cubic

Start at: 2018-08-10 00:12:22
End at: 2018-08-10 00:12:52
Local clock offset: 0.21 ms
Remote clock offset: -9.746 ms

# Below is generated by plot.py at 2018-08-10 00:47:27
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.33 Mbit/s
  95th percentile per-packet one-way delay: 347.784 ms
  Loss rate: 6.57%
-- Flow 1:
  Average throughput: 1.60 Mbit/s
  95th percentile per-packet one-way delay: 346.908 ms
  Loss rate: 4.35%
-- Flow 2:
  Average throughput: 0.68 Mbit/s
  95th percentile per-packet one-way delay: 348.904 ms
  Loss rate: 9.74%
-- Flow 3:
  Average throughput: 0.89 Mbit/s
  95th percentile per-packet one-way delay: 349.573 ms
  Loss rate: 13.00%
Run 2: Report of QUIC Cubic — Data Link

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**Throughput (Mbps)**

- Flow 1 ingress (mean 1.66 Mbit/s)
- Flow 1 egress (mean 1.60 Mbit/s)
- Flow 2 ingress (mean 0.74 Mbit/s)
- Flow 2 egress (mean 0.68 Mbit/s)
- Flow 3 ingress (mean 1.00 Mbit/s)
- Flow 3 egress (mean 0.89 Mbit/s)

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**Packet One Way Delay (ms)**

- Flow 1 (95th percentile 346.91 ms)
- Flow 2 (95th percentile 348.90 ms)
- Flow 3 (95th percentile 349.57 ms)
Run 3: Statistics of QUIC Cubic

Start at: 2018-08-10 00:30:56
End at: 2018-08-10 00:31:26
Local clock offset: -1.065 ms
Remote clock offset: -7.5 ms

# Below is generated by plot.py at 2018-08-10 00:47:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.44 Mbit/s
95th percentile per-packet one-way delay: 347.794 ms
Loss rate: 4.68%
-- Flow 1:
Average throughput: 1.63 Mbit/s
95th percentile per-packet one-way delay: 346.663 ms
Loss rate: 2.58%
-- Flow 2:
Average throughput: 0.89 Mbit/s
95th percentile per-packet one-way delay: 349.217 ms
Loss rate: 7.81%
-- Flow 3:
Average throughput: 0.71 Mbit/s
95th percentile per-packet one-way delay: 348.467 ms
Loss rate: 10.61%
Run 3: Report of QUIC Cubic — Data Link
Run 1: Statistics of SCReAM

Start at: 2018-08-10 00:07:59  
End at: 2018-08-10 00:08:29  
Local clock offset: 0.809 ms  
Remote clock offset: -11.184 ms

# Below is generated by plot.py at 2018-08-10 00:47:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 67.410 ms
Loss rate: 0.38%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 67.410 ms
Loss rate: 0.25%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 67.584 ms
Loss rate: 0.39%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 64.985 ms
Loss rate: 0.70%
Run 1: Report of SCReAM — Data Link

- Throughput (Mbps/s)
- Time (s)
- Flow 1 ingress (mean 0.22 Mbps/s)
- Flow 1 egress (mean 0.22 Mbps/s)
- Flow 2 ingress (mean 0.22 Mbps/s)
- Flow 2 egress (mean 0.22 Mbps/s)
- Flow 3 ingress (mean 0.22 Mbps/s)
- Flow 3 egress (mean 0.22 Mbps/s)

- Per-packet one-way delay (ms)
- Time (s)
- Flow 1 (95th percentile 67.41 ms)
- Flow 2 (95th percentile 67.58 ms)
- Flow 3 (95th percentile 64.98 ms)
Run 2: Statistics of SCReAM

Start at: 2018-08-10 00:26:34
End at: 2018-08-10 00:27:04
Local clock offset: -2.089 ms
Remote clock offset: -7.971 ms

# Below is generated by plot.py at 2018-08-10 00:47:27
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.44 Mbit/s
  95th percentile per-packet one-way delay: 62.110 ms
  Loss rate: 0.38%
-- Flow 1:
  Average throughput: 0.22 Mbit/s
  95th percentile per-packet one-way delay: 58.795 ms
  Loss rate: 0.25%
-- Flow 2:
  Average throughput: 0.22 Mbit/s
  95th percentile per-packet one-way delay: 61.995 ms
  Loss rate: 0.39%
-- Flow 3:
  Average throughput: 0.22 Mbit/s
  95th percentile per-packet one-way delay: 62.468 ms
  Loss rate: 0.70%
Run 2: Report of SCReAM — Data Link

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

![Graph 2: Per-packet one-way delay (ms) vs. Time (s)]
Run 3: Statistics of SCReAM

Start at: 2018-08-10 00:45:09
End at: 2018-08-10 00:45:39
Local clock offset: -2.321 ms
Remote clock offset: -5.975 ms

# Below is generated by plot.py at 2018-08-10 00:47:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 67.265 ms
Loss rate: 0.38%

-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 70.104 ms
Loss rate: 0.26%

-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 66.616 ms
Loss rate: 0.40%

-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 67.283 ms
Loss rate: 0.70%
Run 3: Report of SCReAM — Data Link
Run 1: Statistics of Sprout

Start at: 2018-08-10 00:04:43
End at: 2018-08-10 00:05:13
Local clock offset: -1.617 ms
Remote clock offset: -11.399 ms

# Below is generated by plot.py at 2018-08-10 00:47:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.68 Mbit/s
95th percentile per-packet one-way delay: 83.216 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 82.396 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 0.37 Mbit/s
95th percentile per-packet one-way delay: 82.863 ms
Loss rate: 0.90%
-- Flow 3:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 86.141 ms
Loss rate: 0.03%
Run 1: Report of Sprout — Data Link
Run 2: Statistics of Sprout

Start at: 2018-08-10 00:23:17
End at: 2018-08-10 00:23:47
Local clock offset: -0.93 ms
Remote clock offset: -8.134 ms

# Below is generated by plot.py at 2018-08-10 00:47:27
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.71 Mbit/s
  95th percentile per-packet one-way delay: 87.416 ms
  Loss rate: 0.33%
-- Flow 1:
  Average throughput: 0.38 Mbit/s
  95th percentile per-packet one-way delay: 87.163 ms
  Loss rate: 0.11%
-- Flow 2:
  Average throughput: 0.36 Mbit/s
  95th percentile per-packet one-way delay: 85.079 ms
  Loss rate: 0.32%
-- Flow 3:
  Average throughput: 0.28 Mbit/s
  95th percentile per-packet one-way delay: 111.647 ms
  Loss rate: 1.22%
Run 2: Report of Sprout — Data Link

Throughput (Mbps):

- Flow 1 ingress (mean 0.38 Mbps)
- Flow 1 egress (mean 0.38 Mbps)
- Flow 2 ingress (mean 0.36 Mbps)
- Flow 2 egress (mean 0.36 Mbps)
- Flow 3 ingress (mean 0.28 Mbps)
- Flow 3 egress (mean 0.28 Mbps)

Packet one-way delay (ms):

- Flow 1 (95th percentile 87.16 ms)
- Flow 2 (95th percentile 85.08 ms)
- Flow 3 (95th percentile 111.65 ms)
Run 3: Statistics of Sprout

Start at: 2018-08-10 00:41:52
End at: 2018-08-10 00:42:22
Local clock offset: -2.347 ms
Remote clock offset: -5.903 ms

# Below is generated by plot.py at 2018-08-10 00:47:27
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.65 Mbit/s
  95th percentile per-packet one-way delay: 93.413 ms
  Loss rate: 0.37%
-- Flow 1:
  Average throughput: 0.32 Mbit/s
  95th percentile per-packet one-way delay: 84.287 ms
  Loss rate: 0.13%
-- Flow 2:
  Average throughput: 0.34 Mbit/s
  95th percentile per-packet one-way delay: 118.058 ms
  Loss rate: 0.88%
-- Flow 3:
  Average throughput: 0.32 Mbit/s
  95th percentile per-packet one-way delay: 110.559 ms
  Loss rate: 0.02%
Run 3: Report of Sprout — Data Link
Run 1: Statistics of TaoVA-100x

Start at: 2018-08-10 00:03:38
End at: 2018-08-10 00:04:08
Local clock offset: -2.425 ms
Remote clock offset: -11.481 ms

# Below is generated by plot.py at 2018-08-10 00:47:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.07 Mbit/s
95th percentile per-packet one-way delay: 348.815 ms
Loss rate: 26.78%
-- Flow 1:
Average throughput: 1.21 Mbit/s
95th percentile per-packet one-way delay: 345.998 ms
Loss rate: 21.61%
-- Flow 2:
Average throughput: 0.93 Mbit/s
95th percentile per-packet one-way delay: 354.679 ms
Loss rate: 29.33%
-- Flow 3:
Average throughput: 0.74 Mbit/s
95th percentile per-packet one-way delay: 349.631 ms
Loss rate: 41.13%
Run 1: Report of TaoVA-100x — Data Link

![Throughput and Delay Graphs]
Run 2: Statistics of TaoVA-100x

Start at: 2018-08-10 00:22:12
End at: 2018-08-10 00:22:42
Local clock offset: 0.089 ms
Remote clock offset: -8.531 ms

# Below is generated by plot.py at 2018-08-10 00:47:29
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.40 Mbit/s
  95th percentile per-packet one-way delay: 349.537 ms
  Loss rate: 16.87%
-- Flow 1:
  Average throughput: 1.47 Mbit/s
  95th percentile per-packet one-way delay: 347.658 ms
  Loss rate: 8.03%
-- Flow 2:
  Average throughput: 1.03 Mbit/s
  95th percentile per-packet one-way delay: 351.336 ms
  Loss rate: 22.60%
-- Flow 3:
  Average throughput: 0.75 Mbit/s
  95th percentile per-packet one-way delay: 351.667 ms
  Loss rate: 39.74%
Run 2: Report of TaoVA-100x — Data Link
Run 3: Statistics of TaoVA-100x

Start at: 2018-08-10 00:40:46
End at: 2018-08-10 00:41:16
Local clock offset: -2.358 ms
Remote clock offset: -6.16 ms

# Below is generated by plot.py at 2018-08-10 00:47:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.41 Mbit/s
95th percentile per-packet one-way delay: 347.413 ms
Loss rate: 16.98%
-- Flow 1:
Average throughput: 1.56 Mbit/s
95th percentile per-packet one-way delay: 344.595 ms
Loss rate: 7.29%
-- Flow 2:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 351.269 ms
Loss rate: 26.52%
-- Flow 3:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 350.402 ms
Loss rate: 36.79%
Run 3: Report of TaoVA-100x — Data Link
Run 1: Statistics of TCP Vegas

Start at: 2018-08-10 00:09:05
End at: 2018-08-10 00:09:35
Local clock offset: 1.576 ms
Remote clock offset: -9.682 ms

# Below is generated by plot.py at 2018-08-10 00:47:30
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.39 Mbit/s
  95th percentile per-packet one-way delay: 263.646 ms
  Loss rate: 1.77%
-- Flow 1:
  Average throughput: 1.16 Mbit/s
  95th percentile per-packet one-way delay: 267.759 ms
  Loss rate: 2.78%
-- Flow 2:
  Average throughput: 1.24 Mbit/s
  95th percentile per-packet one-way delay: 262.869 ms
  Loss rate: 0.49%
-- Flow 3:
  Average throughput: 1.23 Mbit/s
  95th percentile per-packet one-way delay: 263.465 ms
  Loss rate: 1.38%
Run 1: Report of TCP Vegas — Data Link

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

- **Flow 1 ingress** (mean 1.19 Mbit/s)
- **Flow 1 egress** (mean 1.16 Mbit/s)
- **Flow 2 ingress** (mean 1.24 Mbit/s)
- **Flow 2 egress** (mean 1.24 Mbit/s)
- **Flow 3 ingress** (mean 1.23 Mbit/s)
- **Flow 3 egress** (mean 1.23 Mbit/s)

![Graph showing per-packet one-way delay for different flows.]

- Flow 1 (95th percentile 267.76 ms)
- Flow 2 (95th percentile 262.87 ms)
- Flow 3 (95th percentile 263.46 ms)
Run 2: Statistics of TCP Vegas

Start at: 2018-08-10 00:27:39
End at: 2018-08-10 00:28:09
Local clock offset: -0.848 ms
Remote clock offset: -8.791 ms

# Below is generated by plot.py at 2018-08-10 00:47:30
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.53 Mbit/s
  95th percentile per-packet one-way delay: 280.965 ms
  Loss rate: 0.66%
-- Flow 1:
  Average throughput: 1.37 Mbit/s
  95th percentile per-packet one-way delay: 281.787 ms
  Loss rate: 0.09%
-- Flow 2:
  Average throughput: 1.27 Mbit/s
  95th percentile per-packet one-way delay: 250.986 ms
  Loss rate: 0.86%
-- Flow 3:
  Average throughput: 0.97 Mbit/s
  95th percentile per-packet one-way delay: 256.332 ms
  Loss rate: 2.59%
Run 2: Report of TCP Vegas — Data Link

Throughput (Mbit/s)

Time (s)

Flow 1 ingress (mean 1.38 Mbit/s)
Flow 1 egress (mean 1.37 Mbit/s)
Flow 2 ingress (mean 1.27 Mbit/s)
Flow 2 egress (mean 1.27 Mbit/s)
Flow 3 ingress (mean 0.98 Mbit/s)
Flow 3 egress (mean 0.97 Mbit/s)

Per-packet one-way delay (ms)

Time (s)

Flow 1 (95th percentile 281.79 ms)
Flow 2 (95th percentile 250.99 ms)
Flow 3 (95th percentile 256.33 ms)
Run 3: Statistics of TCP Vegas

Start at: 2018-08-10 00:46:14
End at: 2018-08-10 00:46:45
Local clock offset: -0.268 ms
Remote clock offset: -5.467 ms

# Below is generated by plot.py at 2018-08-10 00:47:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.02 Mbit/s
95th percentile per-packet one-way delay: 236.038 ms
Loss rate: 0.89%
-- Flow 1:
Average throughput: 0.89 Mbit/s
95th percentile per-packet one-way delay: 230.769 ms
Loss rate: 0.50%
-- Flow 2:
Average throughput: 0.98 Mbit/s
95th percentile per-packet one-way delay: 276.023 ms
Loss rate: 0.74%
-- Flow 3:
Average throughput: 1.48 Mbit/s
95th percentile per-packet one-way delay: 233.684 ms
Loss rate: 1.78%
Run 3: Report of TCP Vegas — Data Link

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

- **Throughput (Mbps):**
  - Blue dotted line: Flow 1 ingress (mean 0.89 Mbps)
  - Blue solid line: Flow 1 egress (mean 0.89 Mbps)
  - Green dotted line: Flow 2 ingress (mean 0.98 Mbps)
  - Green solid line: Flow 2 egress (mean 0.98 Mbps)
  - Red dotted line: Flow 3 ingress (mean 1.49 Mbps)
  - Red solid line: Flow 3 egress (mean 1.48 Mbps)

- **One-way delay (ms):**
  - Blue dotted line: Flow 1 (95th percentile 230.77 ms)
  - Green dotted line: Flow 2 (95th percentile 276.02 ms)
  - Red dotted line: Flow 3 (95th percentile 233.68 ms)
Run 1: Statistics of Verus

Start at: 2018-08-10 00:00:20
End at: 2018-08-10 00:00:50
Local clock offset: 2.485 ms
Remote clock offset: -10.869 ms

# Below is generated by plot.py at 2018-08-10 00:47:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.51 Mbit/s
95th percentile per-packet one-way delay: 356.416 ms
Loss rate: 44.73%
-- Flow 1:
Average throughput: 2.17 Mbit/s
95th percentile per-packet one-way delay: 354.935 ms
Loss rate: 21.97%
-- Flow 2:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 443.876 ms
Loss rate: 83.00%
-- Flow 3:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 369.628 ms
Loss rate: 76.50%
Run 1: Report of Verus — Data Link
Run 2: Statistics of Verus

Start at: 2018-08-10 00:18:55
End at: 2018-08-10 00:19:25
Local clock offset: -7.719 ms
Remote clock offset: -11.423 ms

# Below is generated by plot.py at 2018-08-10 00:47:32
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.20 Mbit/s
  95th percentile per-packet one-way delay: 351.620 ms
  Loss rate: 38.07%
-- Flow 1:
  Average throughput: 1.84 Mbit/s
  95th percentile per-packet one-way delay: 349.657 ms
  Loss rate: 20.38%
-- Flow 2:
  Average throughput: 0.31 Mbit/s
  95th percentile per-packet one-way delay: 348.922 ms
  Loss rate: 35.45%
-- Flow 3:
  Average throughput: 0.54 Mbit/s
  95th percentile per-packet one-way delay: 515.040 ms
  Loss rate: 81.89%
Run 2: Report of Verus — Data Link

![Graph of Throughput and Delay](image_url)

- **Throughput**:
  - Flow 1 ingress (mean 2.33 Mbps)
  - Flow 1 egress (mean 1.84 Mbps)
  - Flow 2 ingress (mean 0.45 Mbps)
  - Flow 2 egress (mean 0.31 Mbps)
  - Flow 3 ingress (mean 2.89 Mbps)
  - Flow 3 egress (mean 0.54 Mbps)

- **Delay**:
  - Flow 1 (95th percentile 349.66 ms)
  - Flow 2 (95th percentile 348.92 ms)
  - Flow 3 (95th percentile 515.04 ms)
Run 3: Statistics of Verus

Start at: 2018-08-10 00:37:30
End at: 2018-08-10 00:38:00
Local clock offset: -0.825 ms
Remote clock offset: -7.029 ms

# Below is generated by plot.py at 2018-08-10 00:47:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.65 Mbit/s
95th percentile per-packet one-way delay: 356.827 ms
Loss rate: 30.54%
-- Flow 1:
Average throughput: 1.50 Mbit/s
95th percentile per-packet one-way delay: 356.268 ms
Loss rate: 24.96%
-- Flow 2:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 362.818 ms
Loss rate: 62.66%
-- Flow 3:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 354.193 ms
Loss rate: 54.62%
Run 3: Report of Verus — Data Link
Run 1: Statistics of PCC-Vivace

Start at: 2018-08-10 00:01:26
End at: 2018-08-10 00:01:56
Local clock offset: 0.729 ms
Remote clock offset: -12.531 ms

# Below is generated by plot.py at 2018-08-10 00:47:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.19 Mbit/s
95th percentile per-packet one-way delay: 353.385 ms
Loss rate: 20.37%
-- Flow 1:
Average throughput: 1.21 Mbit/s
95th percentile per-packet one-way delay: 351.183 ms
Loss rate: 13.27%
-- Flow 2:
Average throughput: 1.03 Mbit/s
95th percentile per-packet one-way delay: 353.107 ms
Loss rate: 21.73%
-- Flow 3:
Average throughput: 0.92 Mbit/s
95th percentile per-packet one-way delay: 359.367 ms
Loss rate: 38.29%
Run 1: Report of PCC-Vivace — Data Link
Run 2: Statistics of PCC-Vivace

Start at: 2018-08-10 00:20:00
End at: 2018-08-10 00:20:30
Local clock offset: -1.491 ms
Remote clock offset: -7.9 ms

# Below is generated by plot.py at 2018-08-10 00:47:34
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 2.28 Mbit/s
  95th percentile per-packet one-way delay: 350.177 ms
  Loss rate: 24.90%
-- Flow 1:
  Average throughput: 1.27 Mbit/s
  95th percentile per-packet one-way delay: 347.568 ms
  Loss rate: 15.48%
-- Flow 2:
  Average throughput: 1.02 Mbit/s
  95th percentile per-packet one-way delay: 350.478 ms
  Loss rate: 25.22%
-- Flow 3:
  Average throughput: 1.01 Mbit/s
  95th percentile per-packet one-way delay: 354.414 ms
  Loss rate: 47.22%
Run 2: Report of PCC-Vivace — Data Link

Throughput (Mbit/s)

Time (s)

Flow 1 ingress (mean 1.50 Mbit/s)
Flow 1 egress (mean 1.27 Mbit/s)
Flow 2 ingress (mean 1.36 Mbit/s)
Flow 2 egress (mean 1.02 Mbit/s)
Flow 3 ingress (mean 1.08 Mbit/s)
Flow 3 egress (mean 1.01 Mbit/s)

Per-packet one-way delay (ms)

Time (s)

Flow 1 (95th percentile 347.57 ms)
Flow 2 (95th percentile 350.48 ms)
Flow 3 (95th percentile 354.41 ms)
Run 3: Statistics of PCC-Vivace

Start at: 2018-08-10 00:38:35
End at: 2018-08-10 00:39:05
Local clock offset: -2.616 ms
Remote clock offset: -7.111 ms

# Below is generated by plot.py at 2018-08-10 00:47:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.26 Mbit/s
95th percentile per-packet one-way delay: 358.522 ms
Loss rate: 54.59%
-- Flow 1:
Average throughput: 0.76 Mbit/s
95th percentile per-packet one-way delay: 356.180 ms
Loss rate: 45.33%
-- Flow 2:
Average throughput: 0.54 Mbit/s
95th percentile per-packet one-way delay: 359.115 ms
Loss rate: 61.91%
-- Flow 3:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 361.807 ms
Loss rate: 67.77%
Run 3: Report of PCC-Vivace — Data Link

[Graph showing throughput and one-way delay over time for different flows, with annotations for mean bandwidth values.]
Run 1: Statistics of WebRTC media

Start at: 2018-08-09 23:51:35
End at: 2018-08-09 23:52:05
Local clock offset: 2.181 ms
Remote clock offset: -12.826 ms

# Below is generated by plot.py at 2018-08-10 00:47:34
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 325.380 ms
Loss rate: 3.56%
-- Flow 1:
Average throughput: 0.77 Mbit/s
95th percentile per-packet one-way delay: 327.283 ms
Loss rate: 3.39%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 329.763 ms
Loss rate: 5.37%
-- Flow 3:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 304.776 ms
Loss rate: 1.70%
Run 1: Report of WebRTC media — Data Link

![Graph of WebRTC media data](image1)

- Flow 1 ingress (mean 0.80 Mbit/s)
- Flow 1 egress (mean 0.77 Mbit/s)
- Flow 2 ingress (mean 0.23 Mbit/s)
- Flow 2 egress (mean 0.22 Mbit/s)
- Flow 3 ingress (mean 0.15 Mbit/s)
- Flow 3 egress (mean 0.14 Mbit/s)

![Graph of WebRTC one-way delay data](image2)

- Flow 1 (95th percentile 327.28 ms)
- Flow 2 (95th percentile 329.76 ms)
- Flow 3 (95th percentile 304.78 ms)
Run 2: Statistics of WebRTC media

Start at: 2018-08-10 00:10:10
End at: 2018-08-10 00:10:40
Local clock offset: -0.554 ms
Remote clock offset: -11.184 ms

# Below is generated by plot.py at 2018-08-10 00:47:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.46 Mbit/s
95th percentile per-packet one-way delay: 301.658 ms
Loss rate: 1.18%
-- Flow 1:
Average throughput: 0.68 Mbit/s
95th percentile per-packet one-way delay: 273.118 ms
Loss rate: 0.28%
-- Flow 2:
Average throughput: 0.53 Mbit/s
95th percentile per-packet one-way delay: 308.355 ms
Loss rate: 1.61%
-- Flow 3:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 292.767 ms
Loss rate: 2.63%
Run 3: Statistics of WebRTC media

Start at: 2018-08-10 00:28:45
End at: 2018-08-10 00:29:15
Local clock offset: -2.839 ms
Remote clock offset: -7.905 ms

# Below is generated by plot.py at 2018-08-10 00:47:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.20 Mbit/s
95th percentile per-packet one-way delay: 219.135 ms
Loss rate: 0.57%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 180.786 ms
Loss rate: 0.22%
-- Flow 2:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 256.418 ms
Loss rate: 0.92%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 233.089 ms
Loss rate: 0.87%
Run 3: Report of WebRTC media — Data Link

![Graph showing WebRTC media data]

- Flow 1 ingress (mean 0.58 Mbit/s)
- Flow 1 egress (mean 0.58 Mbit/s)
- Flow 2 ingress (mean 0.40 Mbit/s)
- Flow 2 egress (mean 0.40 Mbit/s)
- Flow 3 ingress (mean 0.22 Mbit/s)
- Flow 3 egress (mean 0.22 Mbit/s)

![Graph showing ping-pong delay]

- Flow 1 (95th percentile 180.79 ms)
- Flow 2 (95th percentile 256.42 ms)
- Flow 3 (95th percentile 233.09 ms)