

# Measuring Broadband America

## Special Projects: 1Gbps-WG

September 30, 2020

# Agenda

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- Summary of contributions
- Physical bottlenecks
- Congestion factors
- Next Steps
- Q&A



# Working Group Presenters

Working Group 1



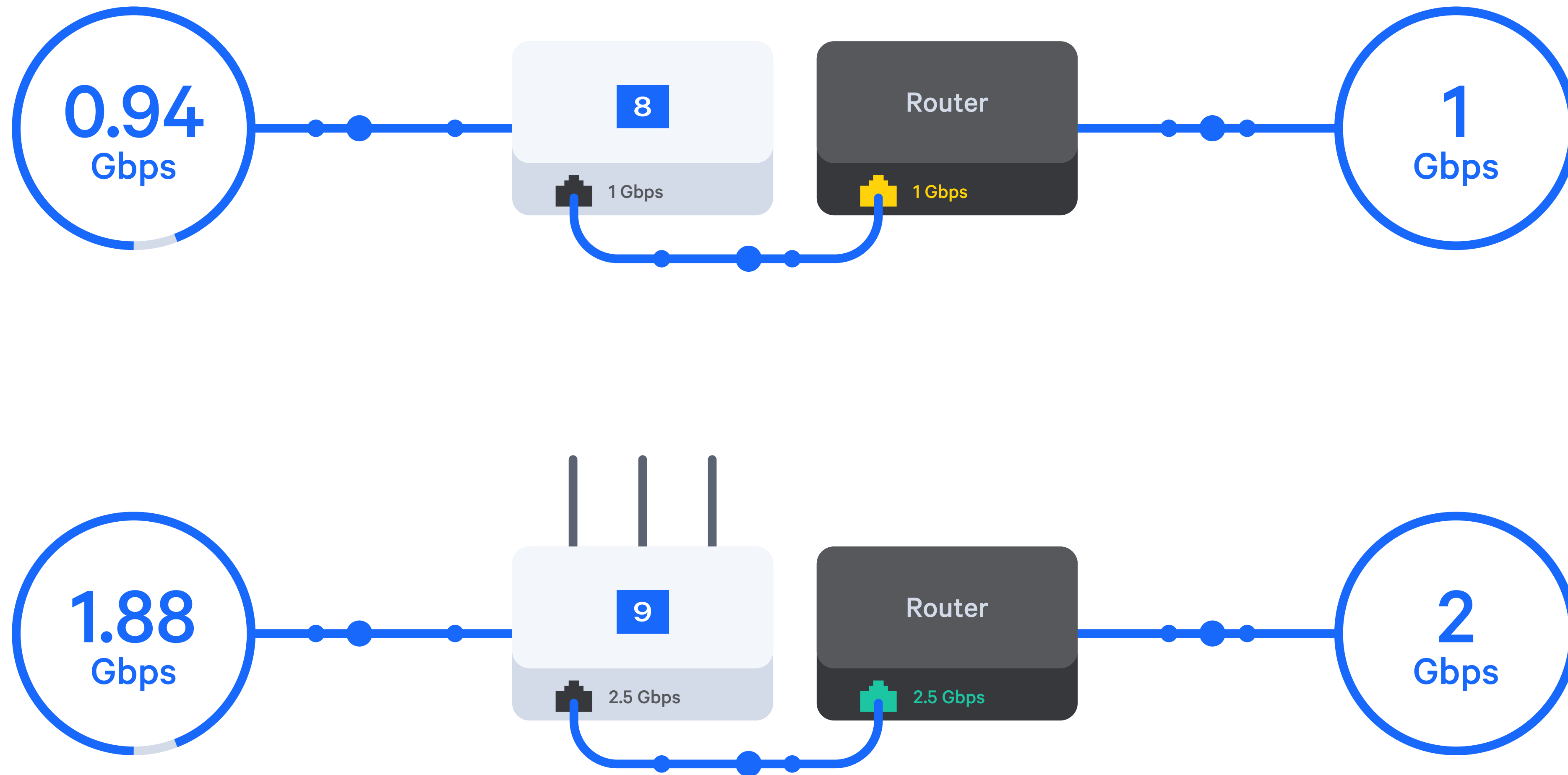
Working Group 2

CableLabs®

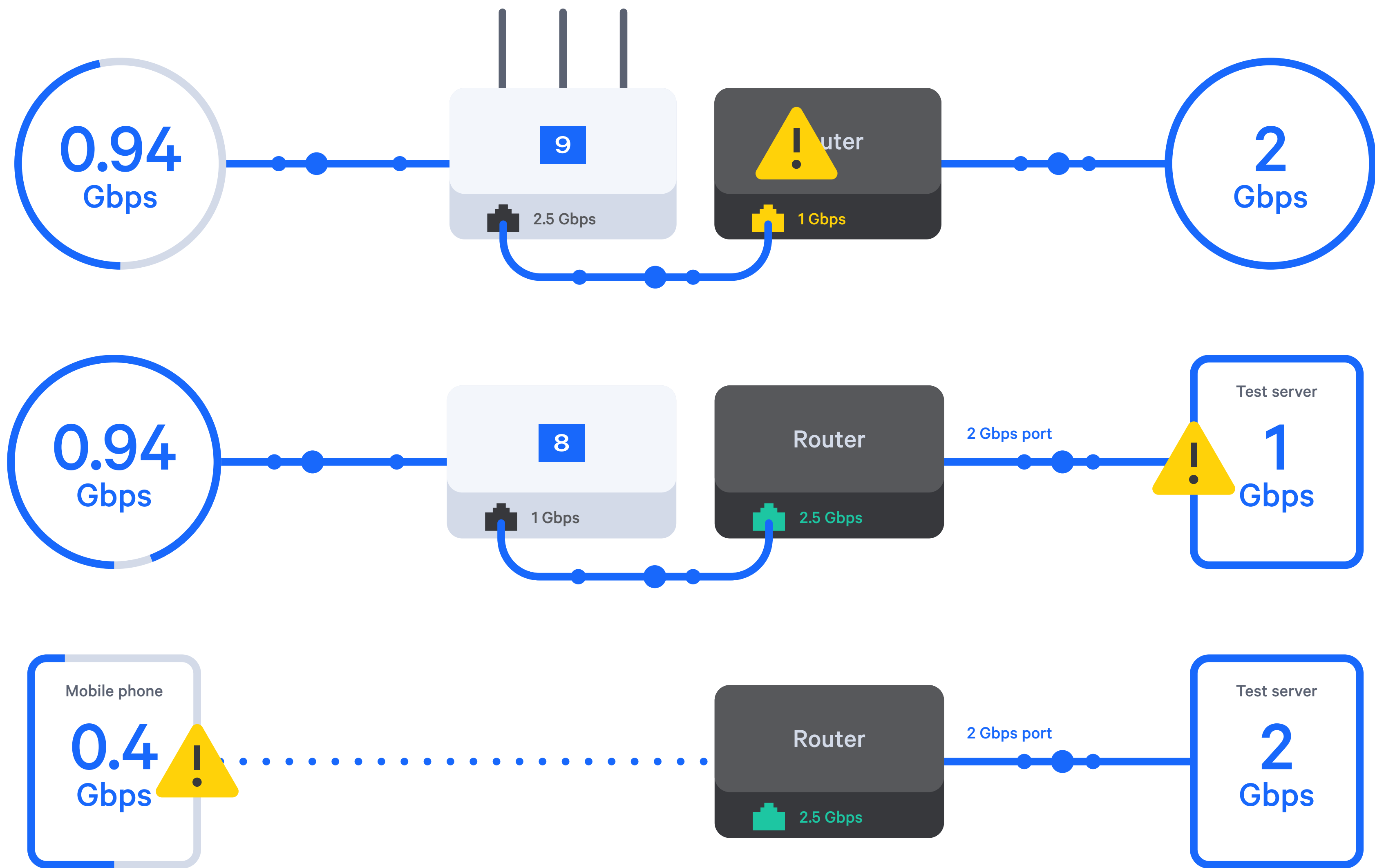
Working Group 3



## Packet Overheads

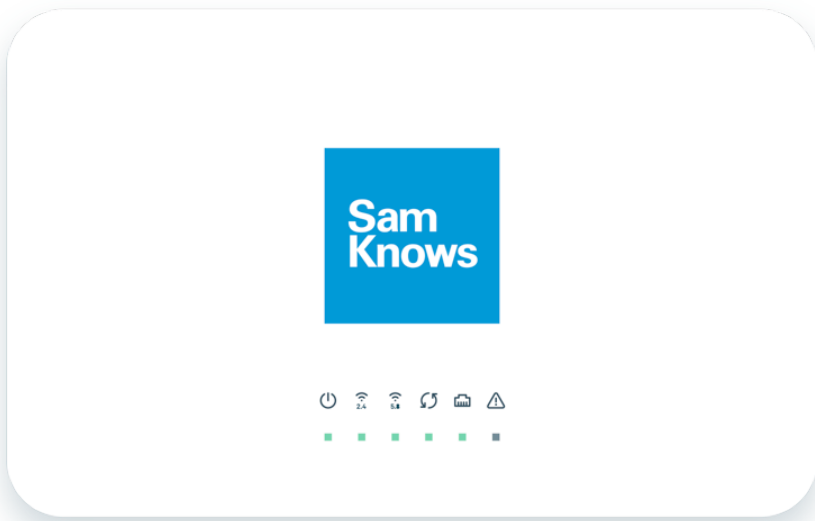


# Overcoming Physical Bottlenecks





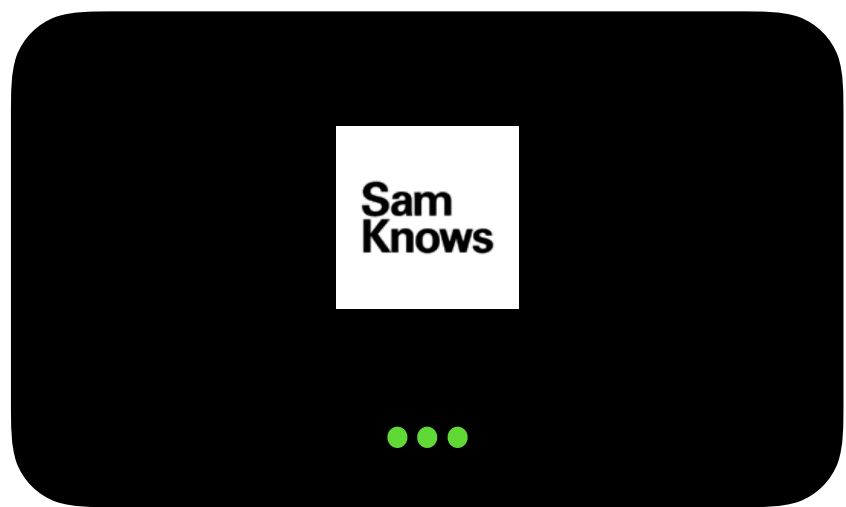
# Hardware Agents



**Whitebox 8.0**  
1Gbps



**Whitebox 9.0**  
2.5Gbps

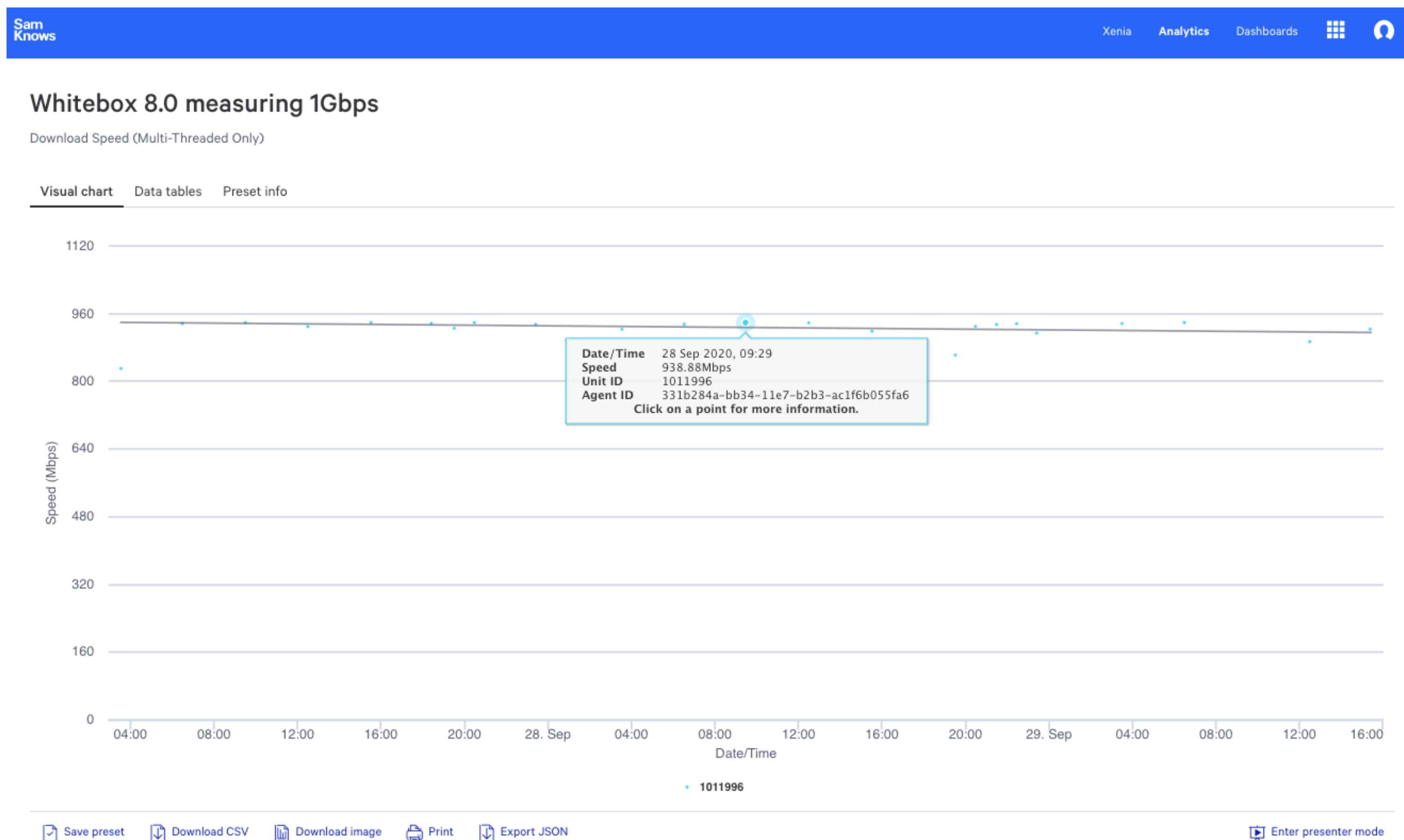


**Whitebox 10**  
10Gbps



**Router SDK**  
Hardware dependent

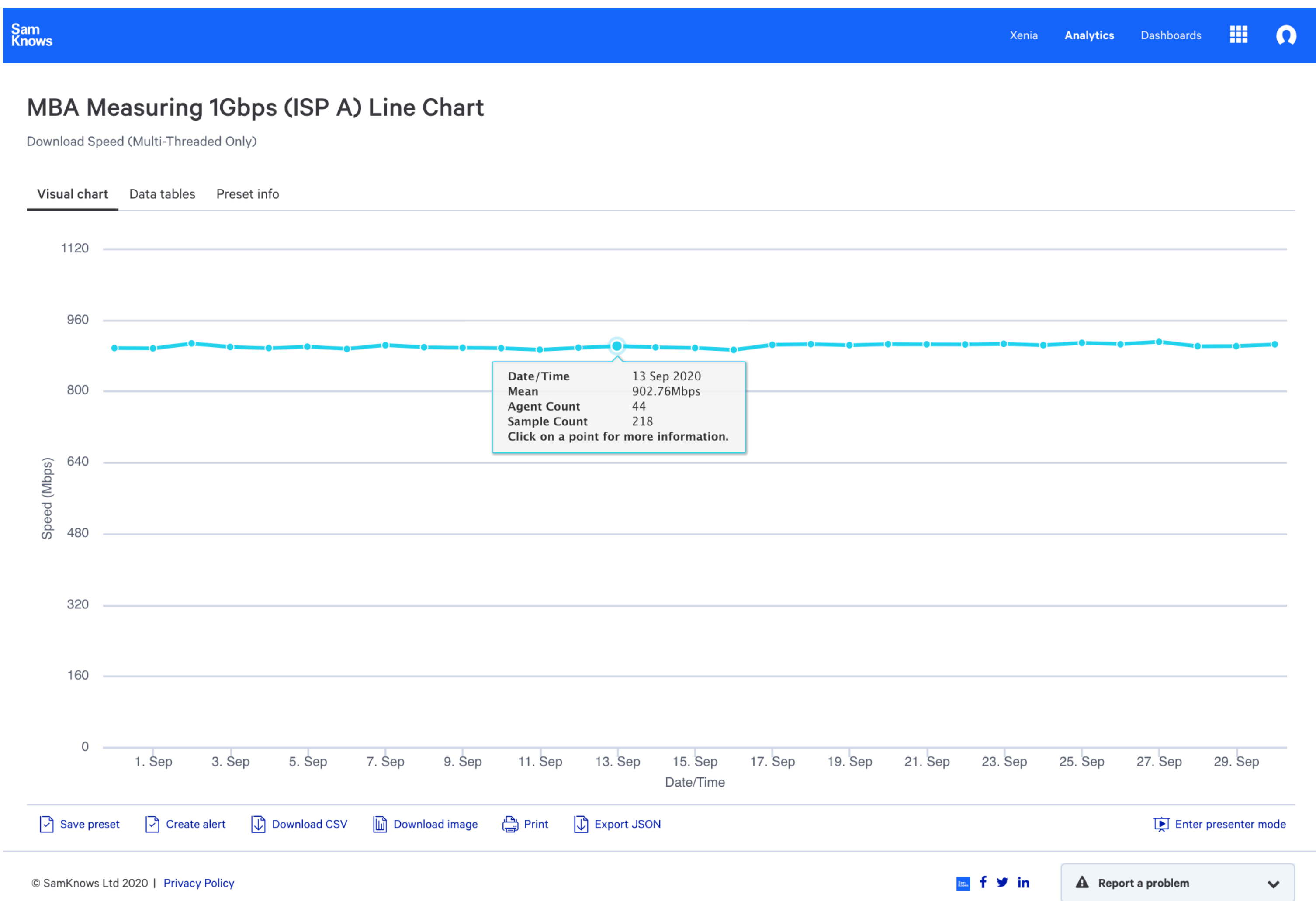
# Whitebox 8.0



- Whitebox 8.0 can measure speeds of up to 1Gbps



# MBA 1Gbps Results (ISP A)



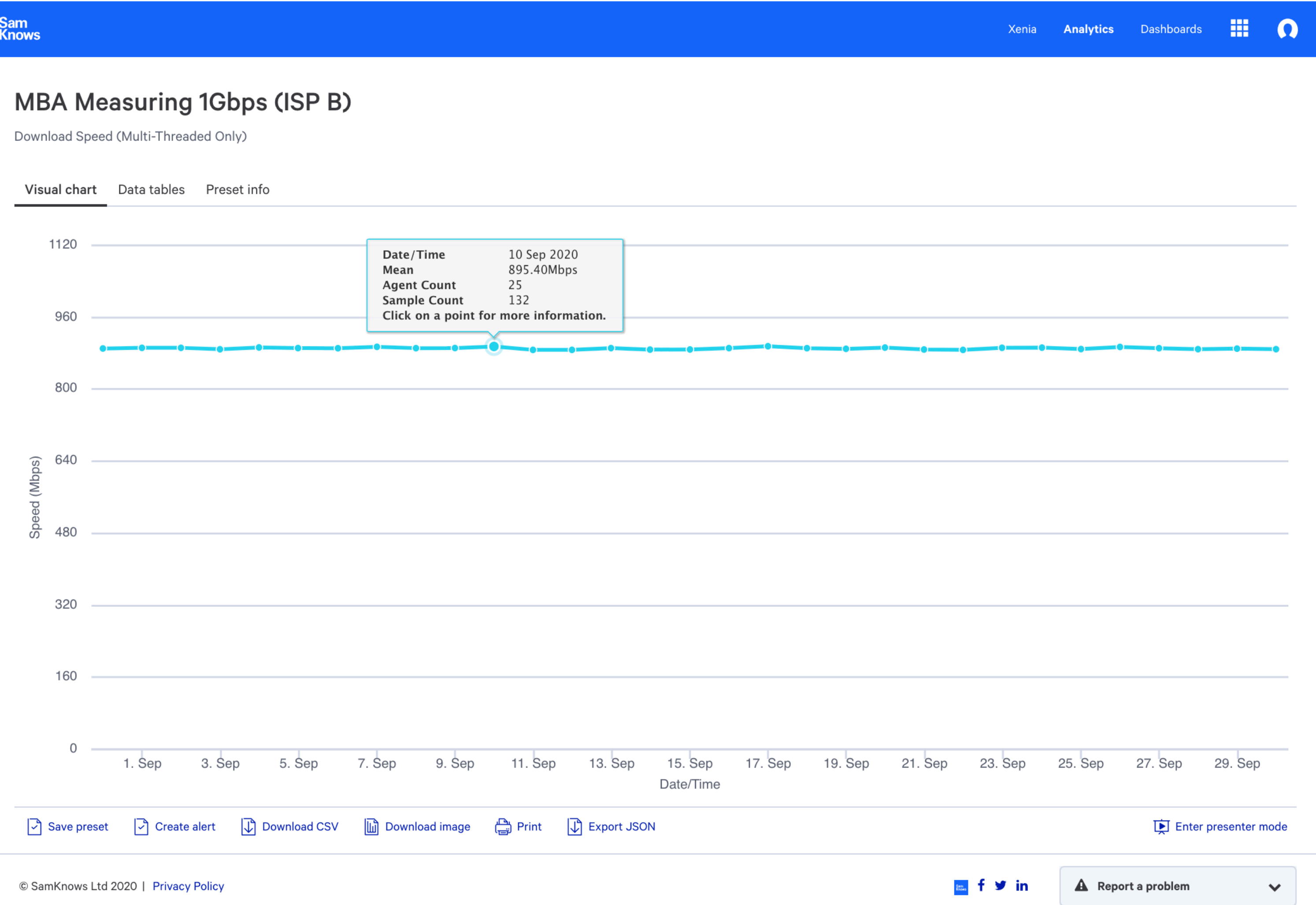
- Results are derived from tests to the off-net Stackpath servers.
- Results from all hours of the day are used (not just peak) and use a 10 second download speed test.
- All tests use 8 parallel connections and TCP (Cubic).
- Data based on 44 Whiteboxes over the last 30 days

# MBA 1Gbps Results (ISP A) cont.



- Results are derived from tests to the off-net Stackpath servers.
- Results from all hours of the day are used (not just peak) and use a 10 second download speed test.
- All tests use 8 parallel connections and TCP (Cubic).
- Individual Whitebox results over the last 30 days

# MBA 1Gbps Results (ISP B)



- Results are derived from tests to the off-net Stackpath servers.
- Results from all hours of the day are used (not just peak) and use a 10 second download speed test.
- All tests use 8 parallel connections and TCP (Cubic).
- Data based on 25 Whiteboxes over the last 30 days

# MBA 1Gbps Results (ISP C)



- Results are derived from tests to the off-net Stackpath servers.
- Results from all hours of the day are used (not just peak) and use a 10 second download speed test.
- All tests use 8 parallel connections and TCP (Cubic).
- Data based on 22 Whiteboxes over the last 30 days

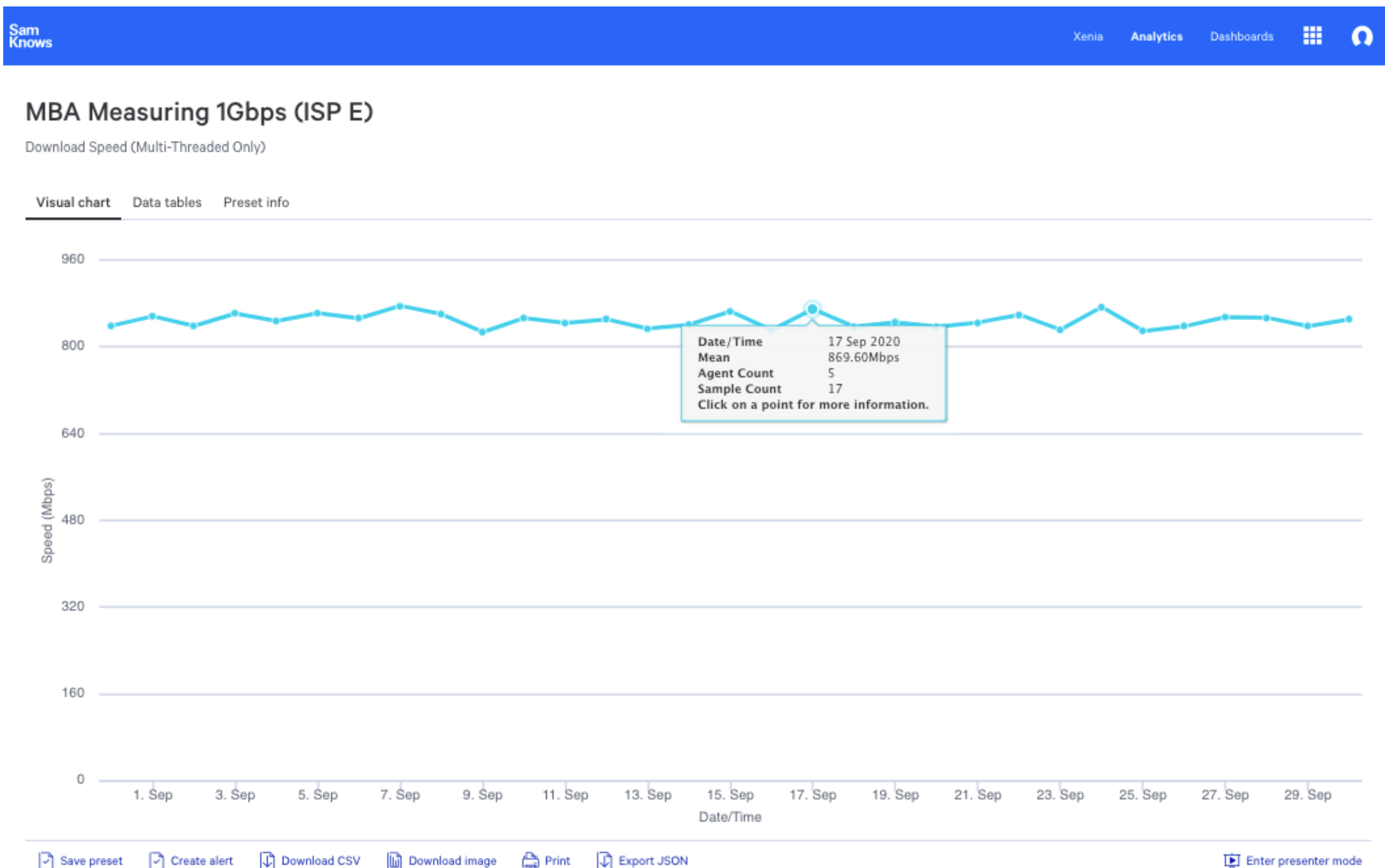
# MBA 1Gbps Results (ISP D)



- Results are derived from tests to the off-net Stackpath servers.
- Results from all hours of the day are used (not just peak) and use a 10 second download speed test.
- All tests use 8 parallel connections and TCP (Cubic).
- Data based on 2 Whiteboxes over the last 30 days



# MBA 1Gbps Results (ISP E)



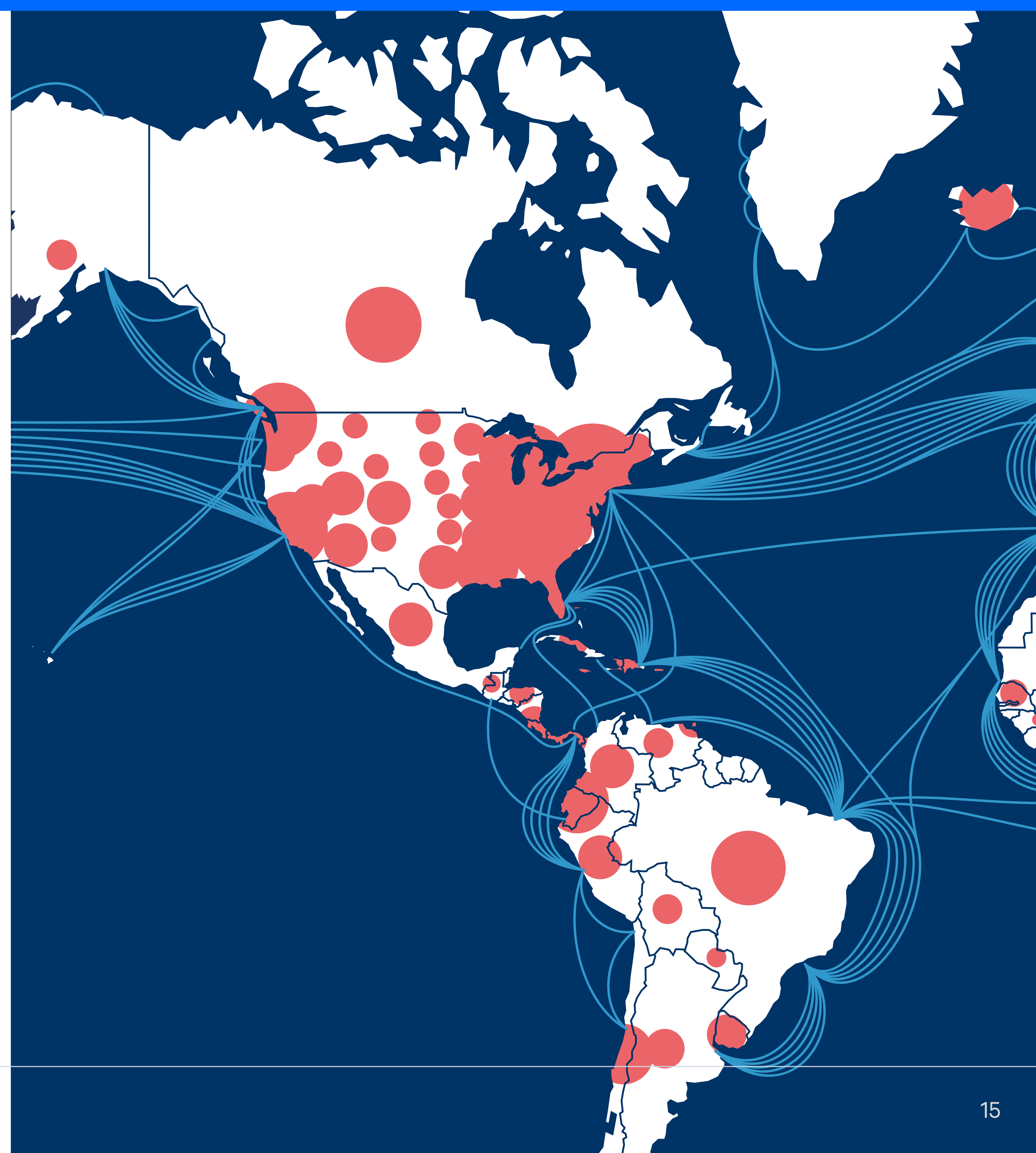
- Results are derived from tests to the off-net Stackpath servers.
- Results from all hours of the day are used (not just peak) and use a 10 second download speed test.
- All tests use 8 parallel connections and TCP (Cubic).
- Data based on 5 Whiteboxes over the last 30 days

## Proposed Investigation

The cause of the remaining delta is unclear and warrants investigation.

The next phase of workshop to benchmark the current approach (TCP, Cubic, 8 Connections, 1:1 client - server) against:

- TCP BBR vs TCP Cubic
- Using multiple servers in parallel
- UDP speedtest
- Number of threads





# Q&A

# End