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Regions: Oregon (Server), Ireland (Client)

Q1. For the data from the serial experiment, how was the effective bandwidth affected by the size of numBytes?

As more data is requested, our bandwidth is effectively higher.

Q2. Using the data from only the Serial experiment, estimate the bandwidth between your client and your server. Now incorporate the data from your Latency experiment to increase the accuracy of your bandwidth estimate. Describe how data from the Latency experiment improves accuracy

Estimated bandwidth depends on the number of bits transmitted and is higher for more bits. We can estimate it to be around numBytes * 4 for bytes 1-1,000, numBytes * 1 for bytes 1,000,000, and numBytes / 10 for bytes 100,000,000. Our round-trip latency when running `ping` on the linux AWS servers was consistent at 118 ms for long periods of time, which is our propagation + transmit + queue times. We can then estimate our bandwidth to be around **100 Mbps**, as it takes about .9 seconds for 10 MB or 1,000,000 bytes.

10 MB Object

	Latency: 1 ms	Latency: 100 ms
Bandwidth: 1 Mbps	80.001 s	80.1 s
Bandwidth: 100 Mbps	.801 s	.9 s

Q3. How did the data from the Serial experiment compare from the Concurrent experiment? Similar? Dissimilar? Explain these results as best you can.

A concurrent request takes the time of the longest request, as all the requests are run in parallel. Because of this, the time taken was always the same as a serial request with 100 million bytes.

Q4. After carrying out these experiments, what is something that you learned about performance and networked applications?

We learned a lot about http routes and how to pass parameters to them. We learned about bandwidth and how it is affected by different amounts of data, especially at a large scale.

Q5. After carrying out these experiments, what is one (or more) unanswered question(s) you still have about network performance?

Is there a lot of latency or overhead for converting a DNS to an IP address?