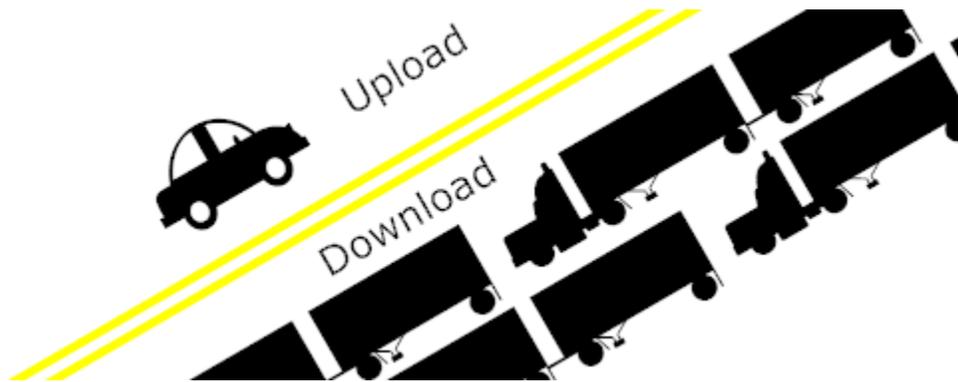


Understanding Bandwidth/Internet Speed

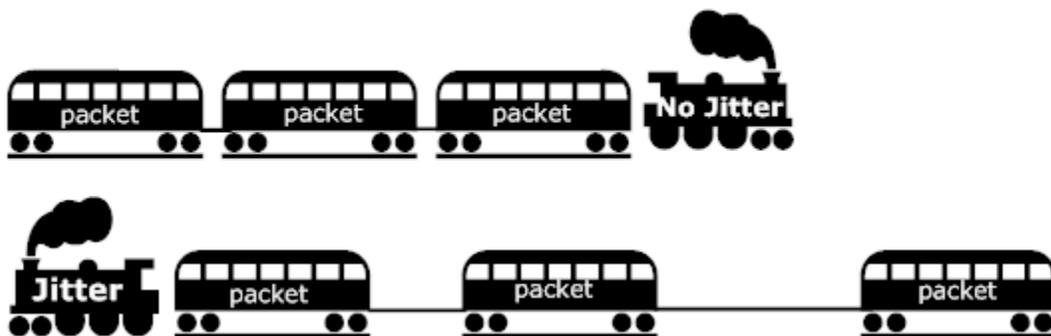
Usually your download speed is greater than your upload speed. Why is that? Well, with average web usage, you typically send a few letters here, a click there. That's your upload overhead. The website or video that you watch as a result of those clicks and letters is the download overhead.

It's like you sending a Smart Car to request that they send you a fleet of tractor trailers. You only need one lane for the Smart Car, but you might need 14 lanes for the tractor trailers. This is known as asynchronous communications. This is why your upload speed is usually less than your download speed.



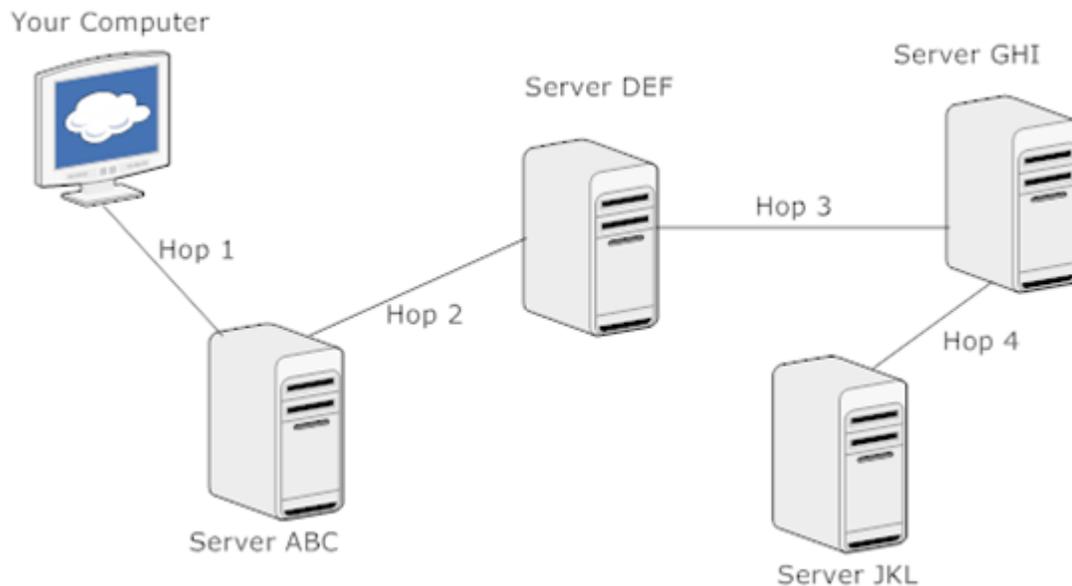
So, what does that have to do with your 3mbps connection resulting in jittery video? Exactly that, those speed tests don't measure jitter! Yes, *jitter* is a real technical term. Imagine a train coming into the station. Each car on that train arrives at the station at the same intervals, because each car is the same distance apart. However, if each car came in with different distances between the cars, well, you can imagine what a mess that would make!

It's the same thing for packets of information on the Internet. The fluctuation of the time between those packets, even if ALL the packets are traveling at 3Mbps causes jitter. Significantly high jitter levels can cause your VoIP to not work. When we talk our voice is a continuous stream of information, so the data needs to be continuous too! Same with video!

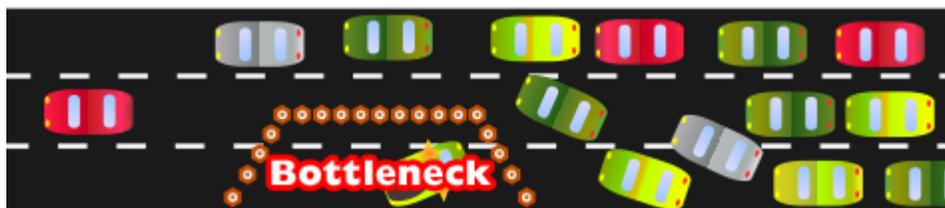


Another cause of Internet speed not being what it seems, is the number of hops a communication needs to make to get to the final server. Let's say you test your speed against server XYZ. Let's also say that there are no hops between your computer and server XYZ. Then you are told your download speed is 3Mbps. Awesome!

Now you try to download something from server DFG. Yet, there are 14 hops, or servers, that your communications have to go to, to hit server DFG. Well, whichever one of those hops is the slowest to respond sets the maximum speed of your communication. We like to call that a bottleneck. You can have a Ferrari, but if you're on a dirt road, you can still only go so fast. You never get to go the full speed you are capable of.



There are many different points for bottlenecks to show up, between the servers you're connecting to, and seeing the final event on your monitor. Your Internet router may be capable of less speed than your Internet connection. That's a bottleneck. Your Network Interface Card may be capable of less speed than your router. That's a bottleneck. Your video card may only be capable of processing the information at a lower speed than your NIC card can deliver it to your computer. There's another bottleneck. Your connection speed is below optimal. That's a bottleneck. Your ISP (Internet service provider's bandwidth is used up. Over sold). That's a bottleneck.



One more point to consider is that your bandwidth may be getting divided amongst a LARGE number of computers in your company. If my Internet modem is capable of

3Mbps but I have 4 computers downloading things at the same time through the same modem via a router, that 3Mbps resources is now shared amongst those computers. At any point in time, any one of those 4 computers is going to have an Internet access speed less than that of the modem.