How the Internet Works

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On the internet, trillions of pieces of data are transferred from one thing to another through a process called packet switching. In an article from Hosting NSB, packet switching is explained as such, “What packet switching basically does is send your data in separate pieces – each tagged with your intended destination.”(Hosting NSB) That being said, the packet switching process doesn’t just directly swap info, the packets are sent through multiple areas before finally getting to their destination, even though the info gets to and from in a matter of no time. Throughout this essay, all the different places a packet may go to deliver the information and complete the process of how the internet works will be explained on a simplified scale.

When you try to communicate with another device you either do it through a cable network or you do it wirelessly through a wireless one. Using a cable network is fine for just a few cables but without a main server, it can become very difficult to connect multiple machines. Connecting the computers to a router is a great and highly efficient way to counteract such a problem so you can have a large number of devices communicate with each other, this communication is referred to as a domain. According to MDN Web Docs, “routers have only one job: like a signaler at a railway station, it makes sure that a message sent from a given computer arrives at the right destination computer.”(MDN) It knows the destination of where it wants to go due to the IP address it is given by the sending machine. A router is usually offered through a certain internet service provider like AT&T. The transporting of the info takes place on a common carrier like AT&T which is basically like a taxi service where the info is transferred. With the IP you can travel through the web with ease knowing where it is going, who sent the info, and so on. That info, depending on its content can be turned into a hosting situation where the website is stored on a computer. In order to use that IP address efficiently, there is a system in place called to domain name service that keeps a memory of the numbers of the IP addresses so a human doesn't have to. To further reinforce the reliability of the packet transfer, computers will use a TCP or transmission control protocol, especially when dealing with a large number of processed packets an hour.

TCP is referred to as “TCP is responsible for routing application protocols to the correct application on the destination computer.”(Shuler) by a Stanford whitepaper article. The TCP is crucial if using a client-server system that centralizes data in one server location and stores it there, then when needed a client will pull that info from the server to be used in that client. Now to use said client-server system you need some transmission mediums in order for that info to be transferred back and forth. The more common mediums are coaxial cables, twisted pair cables, and fiber optic cables. There are other types of mediums but those three are the fastest and provide the utmost efficiency for that system. Depending on the firewall of certain servers, a packet can get denied by a firewall and return to the sender as an error saying it is restricted or saying that the information that was sent out is not authorized to leave that server due to confidentiality like personal records in a medical office or school. Once through the firewall, there is another internal security check for some of the packets that can sneak through the firewall. Once through the firewall, they reach the webserver where it is then sent to the client and the info is dumped out of the packet. The process of packet switching happens over and over til the full info sent is gathered at the receiving client. An example of this is much like the downloading of a video game where it takes a long time to receive all the data because it is sent and stored in packets until the whole video game is fully received and ready to play.

The internet works how it does due to the combined processes explained throughout the essay, not just an A to B exchange like a printer can be to a single computer. The internet without this intricate process of moving and handling info would be very difficult to navigate as it used to be so difficult to navigate when the internet wasn’t as advanced as it is today. Packet switching is and will continue to be one of the most vital parts of the internet for years and years until someone discovers a better more efficient way to traverse the internet.

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