

### How does the Internet works?

In 1957, computers were used only for one task at a time or what we called batch processing. As computers are getting larger and larger, they were to be stored in a special cooled rooms. But the downside of this is developers could not work directly on the computers. So, a specialist is being called for to connect the developers from the computers. Programming at that time does a lot of manual labor. The indirect connection of the between the programmer and the computers generates a lot of bugs and requires a lot of time developing. So in that year marked a big change on the history of internet. A remote connection is installed so that the developer can work directly on to the computers and the idea of time sharing came up to enable developers work at the same time in one computer. In 1958, United States founded DARPA (Defense Advanced Research Project Agency). At that time, knowledge passing is done by people. So, they planned a large scale computer network in order to fasten knowledge passing and avoid project redundancy among offices and they named it as ARPANET. Aside from ARPANET, RAND (Rand Corporation), NPL (National Physical Laboratory) in England and CYCLADES (Institut de Recherche d' Informatique et d' Automatique) of France. The concepts of these network became the foundation of the modern Internet.

The Internet works through a packet routing network in accordance with the Internet Protocol (IP), the Transport Control Protocol (TCP) and other protocols. A protocol is a set of rules specifying how computers should communicate with each other over a network. For example, the Transport Control Protocol has a rule that if one computer sends data to another computer, the destination computer should let the source computer know if any data was missing so the source computer can re-send it. Or the Internet Protocol which specifies how computers should route information to other computers by attaching addresses onto the data it sends.

Data sent across the Internet is called a message. Before a message is sent, it is first split in many fragments called packets. These packets are sent independently of each other. The typical maximum packet size is between 1000 and 3000 characters. The Internet Protocol specifies how messages should be packetized. It is a network that routes packets from a source computer to a destination computer. The Internet is made up of a massive network of specialized computers called routers. Each router's job is to know how to move packets along from their source to their destination. A packet will have moved through multiple routers during its journey. The packets may arrive at their destination out of order. This happens when a later packet finds a quicker path to the destination than an earlier one. But packet's header contains information about the packet's order relative to the entire message. The Transport Control Protocol uses this info for reconstructing the message at the destination.

The Internet Protocol makes no guarantee that packets will always arrive at their destinations. When that happens, it's called called a packet loss. This typically happens when a router receives more packets it can process. It has no option other than to drop some packets. However, the Transport Control Protocol handles packet loss by performing re-transmissions. It does this by having the destination computer periodically send acknowledgement packets back to the source computer indicating how much of the message it has received and reconstructed. If the destination computer finds there are missing packets, it sends a request to the source computer asking it to resend the missing packets.

Sources:

<https://medium.com/@User3141592/how-does-the-internet-work-edc2e22e7eb8>

[https://courses.dcs.adnu.edu.ph/pluginfile.php/10474/mod\\_resource/content/1/History\\_of\\_the\\_Internet\\_medium.mp4](https://courses.dcs.adnu.edu.ph/pluginfile.php/10474/mod_resource/content/1/History_of_the_Internet_medium.mp4)