

In networking, a packet is a small segment of a larger message. Each packet contains both data and information about that data. The information about the packet's contents is known as the "header," and it goes at the front of the packet so that the receiving machine knows what to do with the packet. To understand the purpose of a packet header, think of how some consumer products come with assembly instructions. When data gets sent over the Internet, it is first broken up into smaller packets, which are then translated into bits. The packets get routed to their destination by various networking devices such as routers and switches. When the packets arrive at their destination, the receiving device reassembles the packets in order and can then use or display the data. Compare this process to the way the United States' Statue of Liberty was constructed. The Statue of Liberty was first designed and built in France. However, it was too large to fit onto a ship, so it was shipped to the United States in pieces, along with instructions about where each piece belonged. Workers who received the pieces reassembled them into the statue that stands today in New York. While this took a long time for the Statue of Liberty, sending digital information in smaller pieces is extremely fast over the Internet. For instance, a photo of the Statue of Liberty stored on a web server can travel across the world one packet at a time and load on someone's computer within milliseconds. Packets are sent across the Internet using a technique called packet switching. Intermediary routers and switches are able to process packets independently from each other, without accounting for their source or destination. This is by design so that no single connection dominates the network. If data was sent between computers all at once with no packet switching, a connection between two computers could occupy multiple cables, routers, and switches for minutes at a time. Essentially, only two people would be able to use the Internet at a time — instead of an almost unlimited number of people, as is the case in reality.