# HOW INFORMATION TRANSFERS ON THE NET   Lesson 5

All computers on the Internet work together to transfer information back and forth around the world.

The data that travel over large distance of cables affect the quality of transmission. That's why different qualities of wired and wireless equipment are being used to provide data transfer over the Internet.

Packets

When you send information through the Internet, the information is broken down into smaller pieces, called packets. Each packet travels independently through the Internet and may take a different path to arrive at the intended destination. When information arrives at its destination, the packets are reassembled.
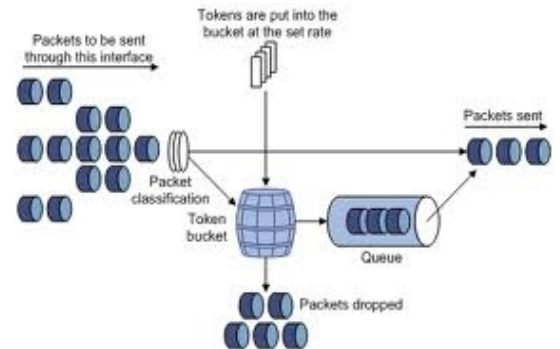

Router

A router is a specialized device that regulates traffic on the Internet and picks the most efficient route for each packet. A packet may pass through many routers before reaching its intended destination.

TCP/IP

Every machine on the Internet has a unique identifying number, called an IP Address. The IP stands for Internet Protocol, which is the language that computers use to communicate over the Internet. A protocol is the pre-defined way that someone who wants to use a service talks with that service. The "someone" could be a person, but more often it is a computer program like a Web browser.

The Transmission Control Protocol/Internet Protocol (TCP/IP) divides information you send into packets and sends the packets across the Internet. When information arrives at the intended destination. TCP/IP ensures that all the packets arrived safely.
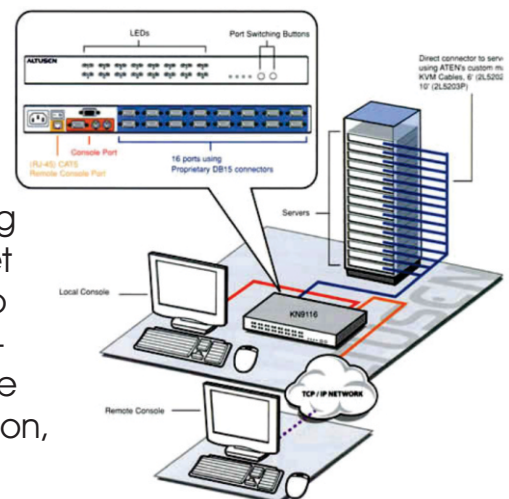
Internet Backbone

The National Science Foundation (NSF) created the first high-speed backbone in 1987. Called NSFNET, it was a T1 line that connected 170 smaller networks together and operated at 1.544 Mbps (million bits per second). IBM, MCI and Merit worked with NSF to create the backbone and developed a T3 (45 Mbps) backbone the following year.

Backbones are typically fiber optic trunk lines. The trunk line has multiple fiber optic cables combined together to increase the capacity. Fiber optic cables are designated OC for optical carrier, such as OC-3, OC-12 or OC-48. An OC-3 line is capable of transmitting 155 Mbps while an OC-48 can transmit 2,488 Mbps (2.488 Gbps). Compare that to a typical 56K modem transmitting 56,000 bps and you can see how fast a modern backbone is.

Today, there are many companies that operate their own high-capacity backbones, and all of them interconnect at various NAPs around the world. In this way, everyone on the Internet, no matter where they are and what company they use, is able to talk to everyone else on the planet. The entire Internet is a gigantic, sprawling agreement between companies to intercommunicate freely.

Download and Upload Information

When you receive information from another computer on the Internet, you are downloading the information.

When you send information from another computer on the Internet, you are uploading the information.

Lesson 5 How Information Transfers on the Net   Part 1 Chapter 1
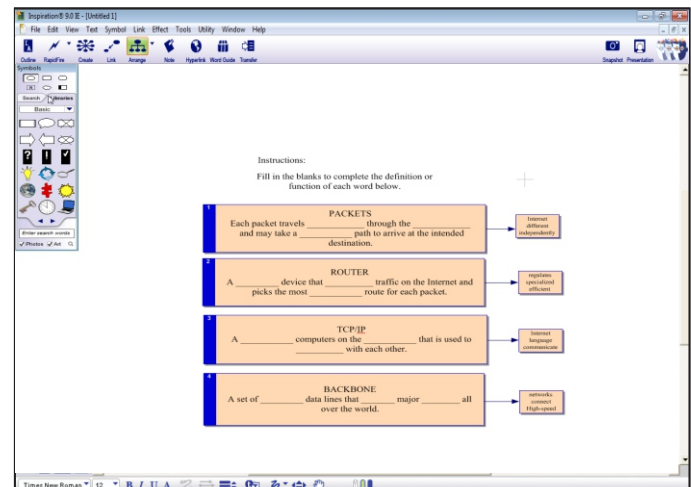
Lab. 5.1 **Fill It In**

Estimated Completion time: 15 - 20 Minutes

Directions:

Preview:

1. Launch **Inspiration**.
2. Open and answer **You Complete Me**.
3. Fill in the blanks to provide the definition/function of each word. Choose your answer from the word box opposite of the sentence symbol.
4. Click the sentence symbol to show the blue drop-down arrow. Click the arrow to show the word box containing the choices.
5. Double-click to type your answer on the blank.
6. Save the activity as **YouCompleteMe**.

Lab. 5.2   **Its Showtime!**

Estimated Completion time: 15 - 20 Minutes

Preview:

Directions:

1. Launch **Inspiration**.
2. Open and answer **It's Show Time**
3. Label the parts of the diagram. Choose your answers from the word box opposite the diagram.
4. Click the diagram to show the blue drop-down arrow in the upper-right corner. Click the arrow to view the word box. Refer to your textbook to answer the activity.
5. Save the activity as **It'sShowTime!**