12-13-18

Data on the Internet

yeet

Journal

How does information get from one computing device to another using the Internet?

Describe at least 3 steps that need to happen.

Objectives:

- Students will explain the abstractions in the Internet and how the Internet functions.

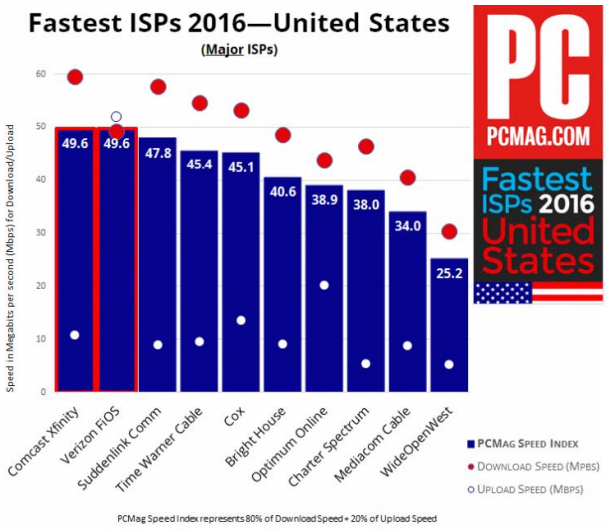
How does information get from one computing device to another using the Internet?

Did you include any of these steps?

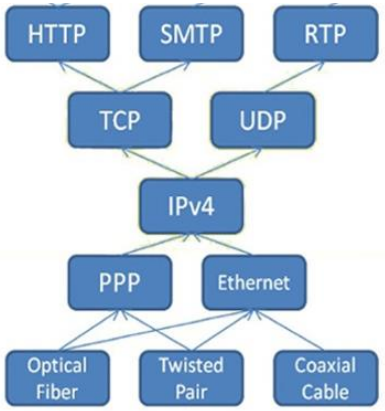
1. Information is encoded in binary and stored until it's ready to send.
2. Information is divided up into packets and sent.
3. When the information arrives it is decoded, reassembled, and changed back into words, pictures, sounds, data or whatever it started out as.

Review: How data travels

Individuals connect to the Internet through an ISP (Internet Service Provider) allowing them access to the system.

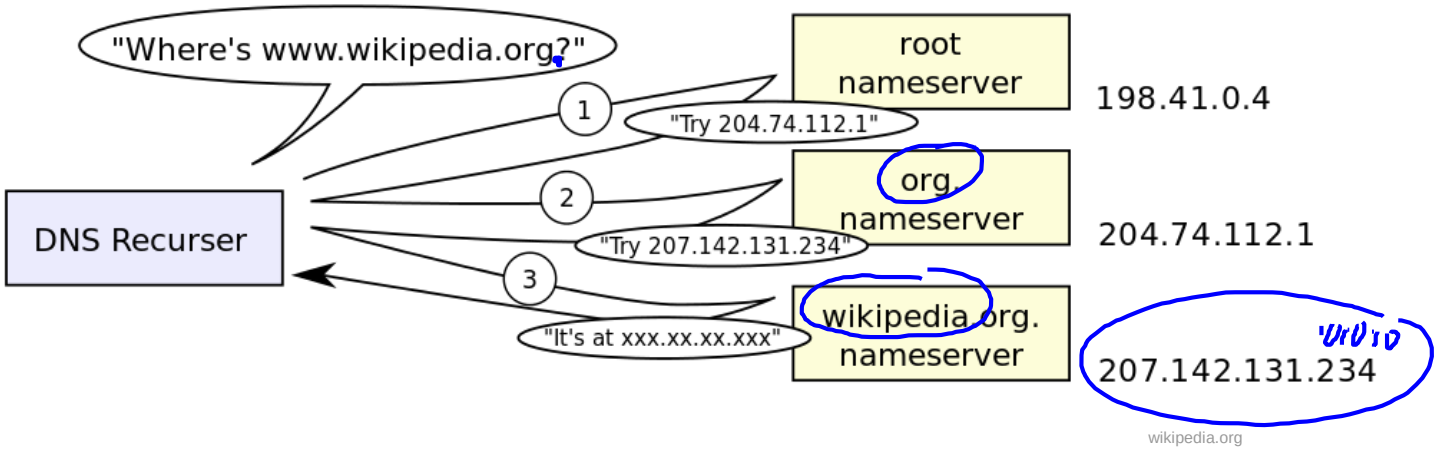


The rules on the Internet for how messages are addressed and passed on are called protocols.



CS Matters

Review: How data travels

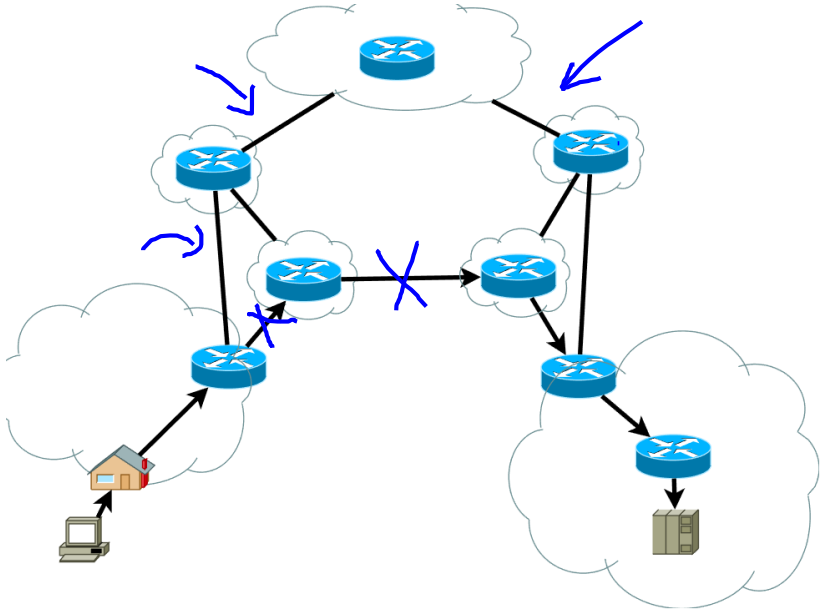


Each device on the internet has a unique numeric address called an IP address, which can be looked up automatically using a Domain Name Server, which is like a giant address book.

Review: How data travels

Packets are guided through the internet by routers.

Having multiple paths or redundancy makes the Internet more reliable and allows it to keep growing as more people and devices are connected to the system.



https://upload.wikimedia.org/wikipedia/commons/4/49/Internet-transit.svg

CS Matters

How computer storage works

Watch the video and fill in the notes.

How computer memory works (5:05) http://ed.ted.com/lessons/how-computer-memory-works-kanawat-senanan

Questions to answer after watching the video:

1. Each bit is stored in a memory cell as a 0 or 1. What are the challenges that hardware designers struggle with when designing computer memory as the amount of storage grows exponentially?

2. The operating system allocates space in the short term memory when you run a program. Latency is the time it takes to get information from one place to another. What are the differences between DRAM and SRAM? Which is fastest? Least expensive? What low level hardware components are they each made of?

3. Compare magnetic, optical and flash storage. List an advantage and disadvantage of each.

4. Is computer memory stable, reliable and permanent? Give specific examples of problems with different kinds of computer storage.

CS Matters

Compression

Activity Widget:
https://bit.ly/2fB4NHE

Review Questions for Test

Which of the following has the greatest potential for compromising a user's personal privacy?

(A) A group of cookies stored by the user's Web browser

(B) The Internet Protocol (IP) address of the user's computer

(C) The user's e-mail address

(D) The user's public key used for encryption

Review Questions for Test

A search engine has a trend-tracking feature that provides information on how popular a search term is. The data can be filtered by geographic region, date, and category. Categories include arts and entertainment, computers and electronics, games, news, people and society, shopping, sports, and travel. Which of the following questions is LEAST likely to be answerable using the trends feature?

(A) In what month does a particular sport receive the most searches?

(B) In which political candidates are people interested?

(C) What is the cost of a certain electronics product?

(D) Which region of the country has the greatest number of people searching for opera performances?

Review Questions for Test

A user enters a Web address in a browser, and a request for a file is sent to a Web server. Which of the following best describes how the file is sent to the user?

(A) The file is broken into packets for transmission. The packets must be reassembled upon receipt.

(B) The file is broken into packets for transmission. The user's browser must request each packet in order until all packets are received.

(C) The server attempts to connect directly to the user's computer. If the connection is successful, the entire file is sent. If the connection is unsuccessful, an error message is sent to the user.

(D) The server repeatedly attempts to connect directly to the user's computer until a connection is made. Once the connection is made, the entire file is sent.

Check Vocabulary on Unit Sheet