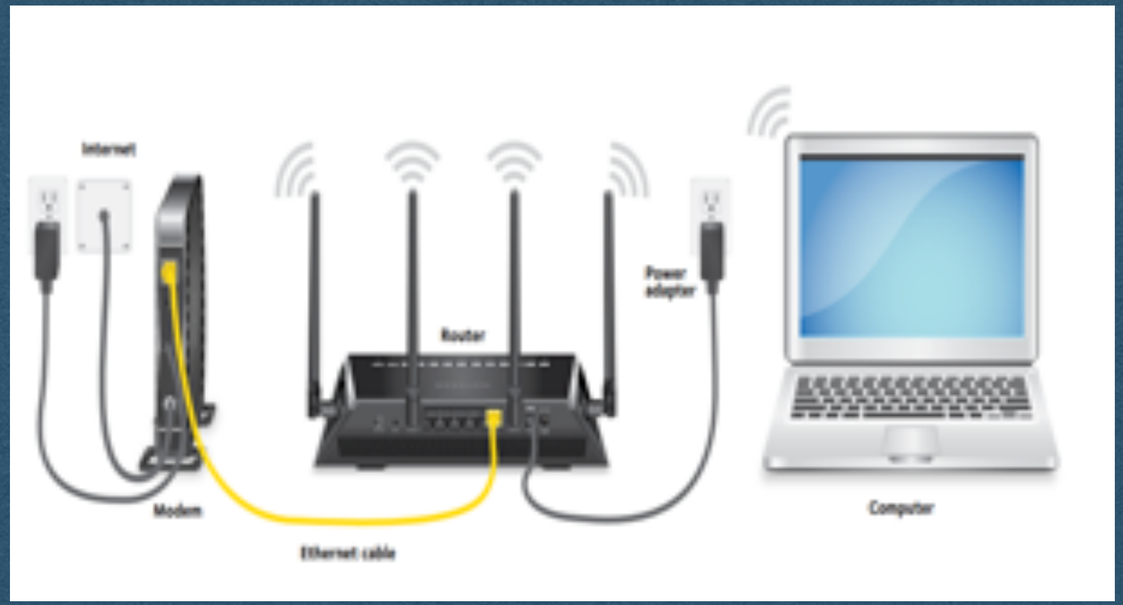
The Internet

Networks, TCP/IP

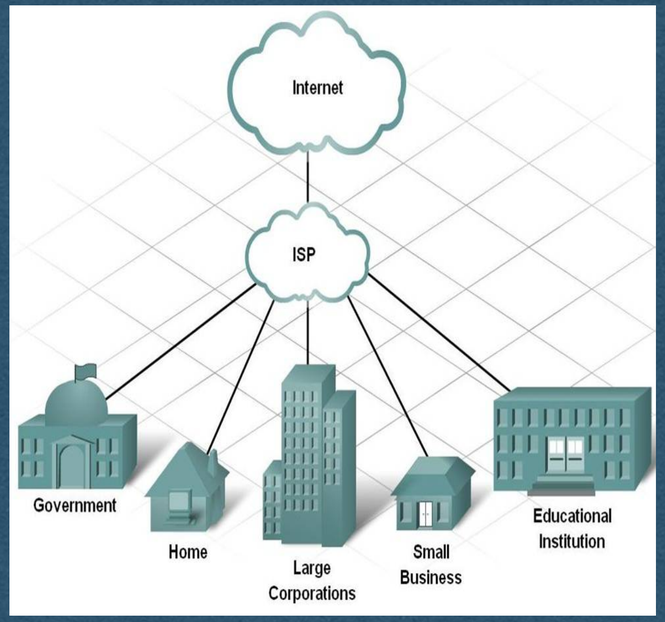
Local Area Network (LAN)

Connect a small group of devices



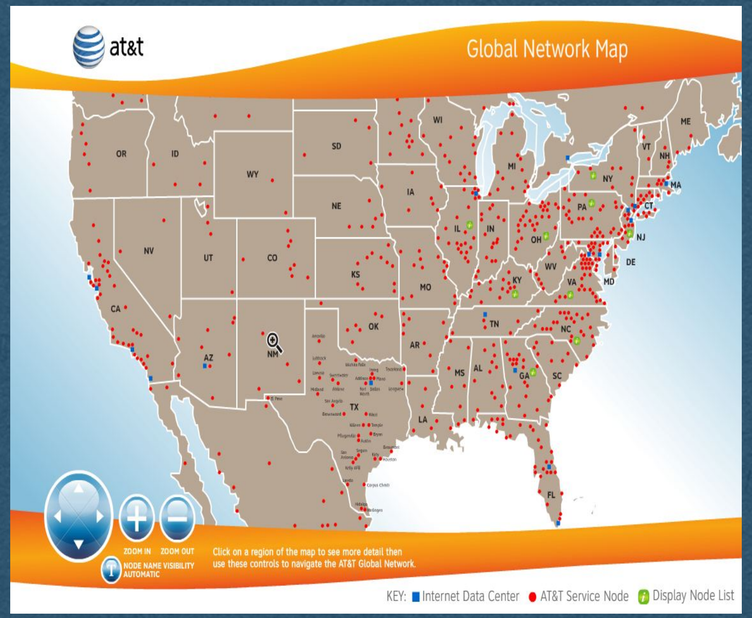
Internet Service Provider (ISP)

Connect customers to The Internet

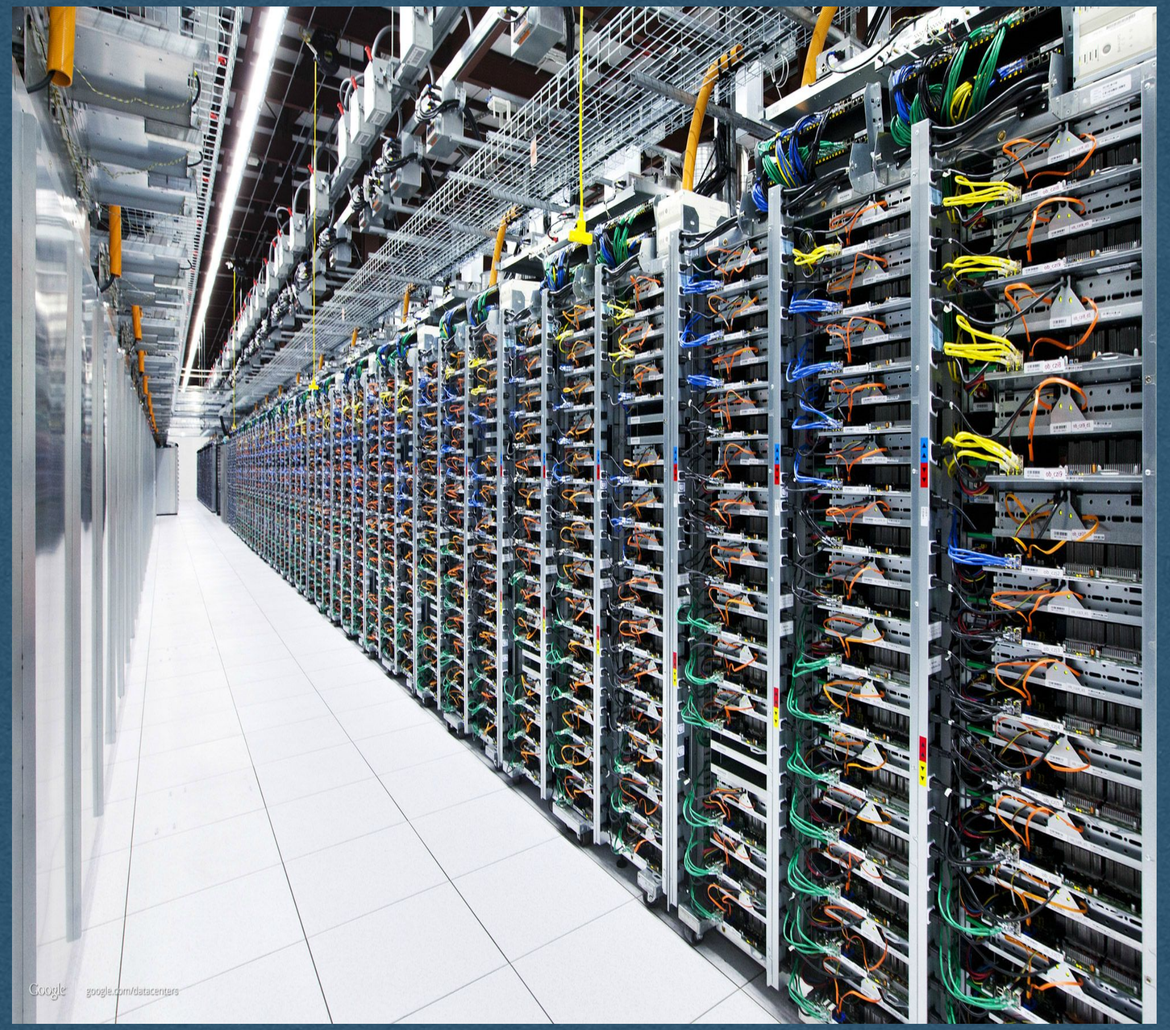


Tier 1 Networks

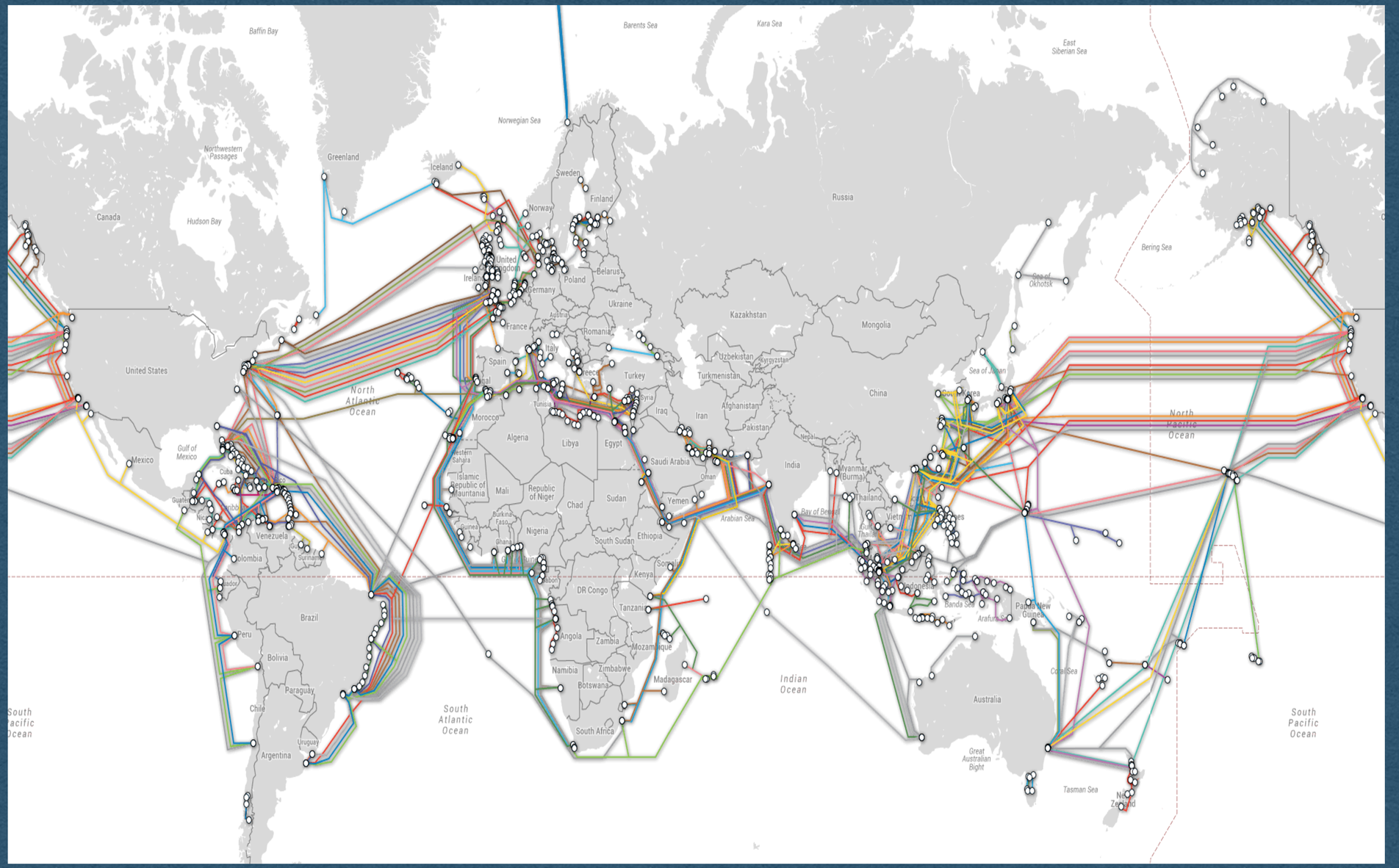
The Internet



Data Centers Power Apps



It’s all Cables!

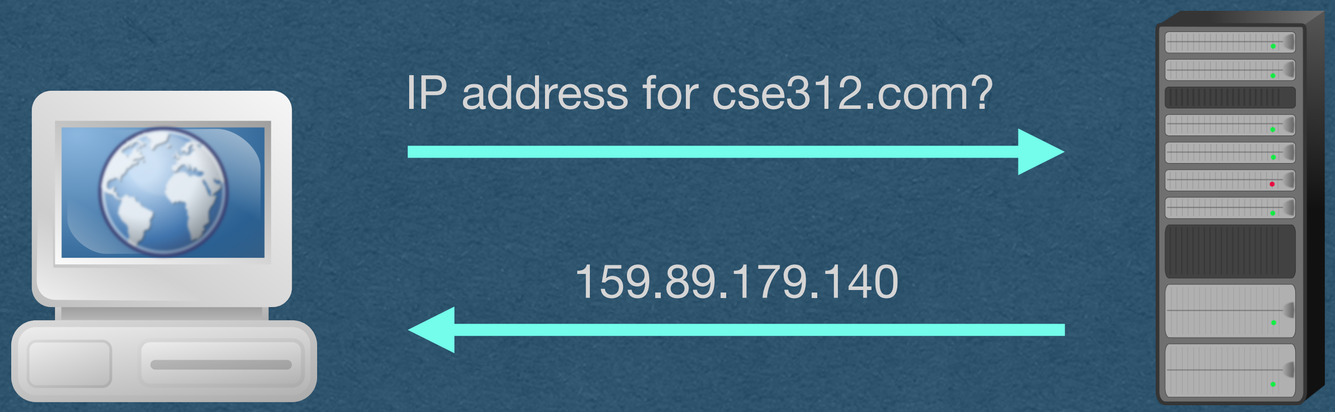


How do we use these cables?

Internet Protocol

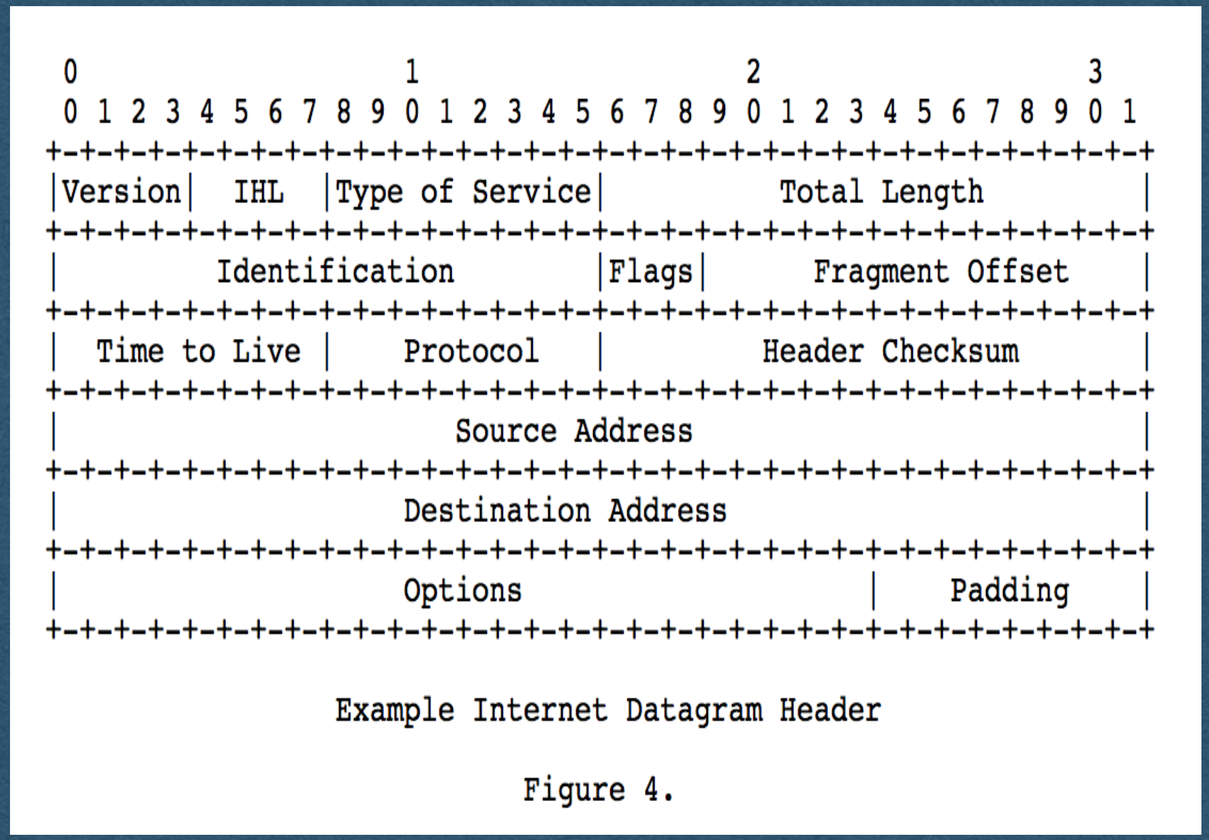
Internet Protocol (IP) Address

- Every device has an IP Address
  - Use this address to send messages to that device
  - Ex: 172.217.12.211
- Use DNS (Domain Name Server) to lookup IP address by domain name



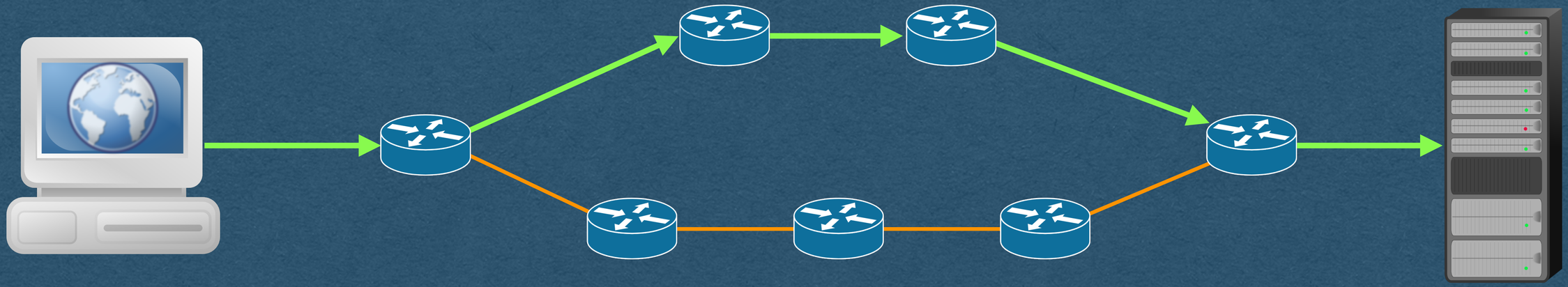
Data is sent over the Internet in packets/datagrams

Large messages are sent in multiple packets



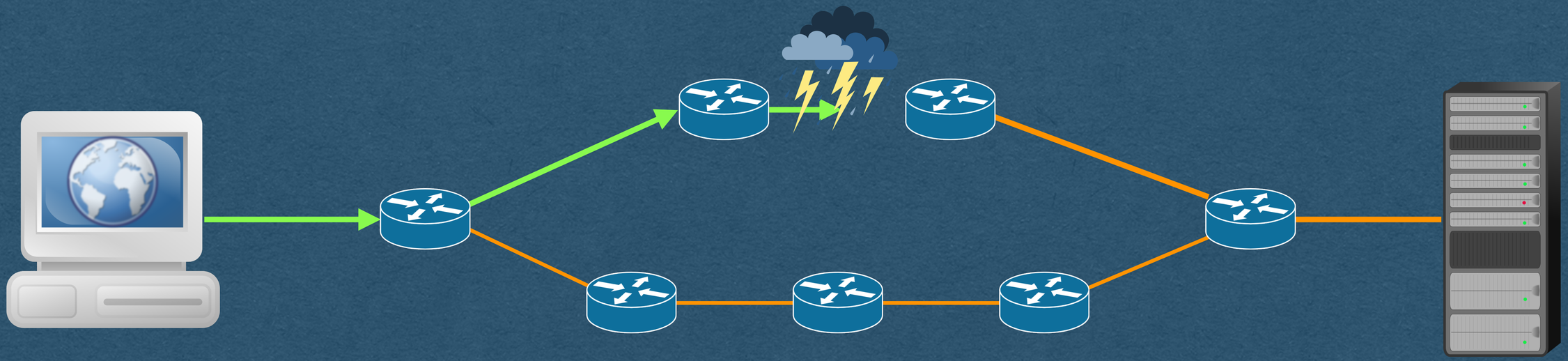
Routing Packets

1. Check the destination IP address of the packet
2. Send the packet to the next router on its path
3. Fuhgettaboutit



The Internet is Unreliable

Many factors cause packets to be dropped



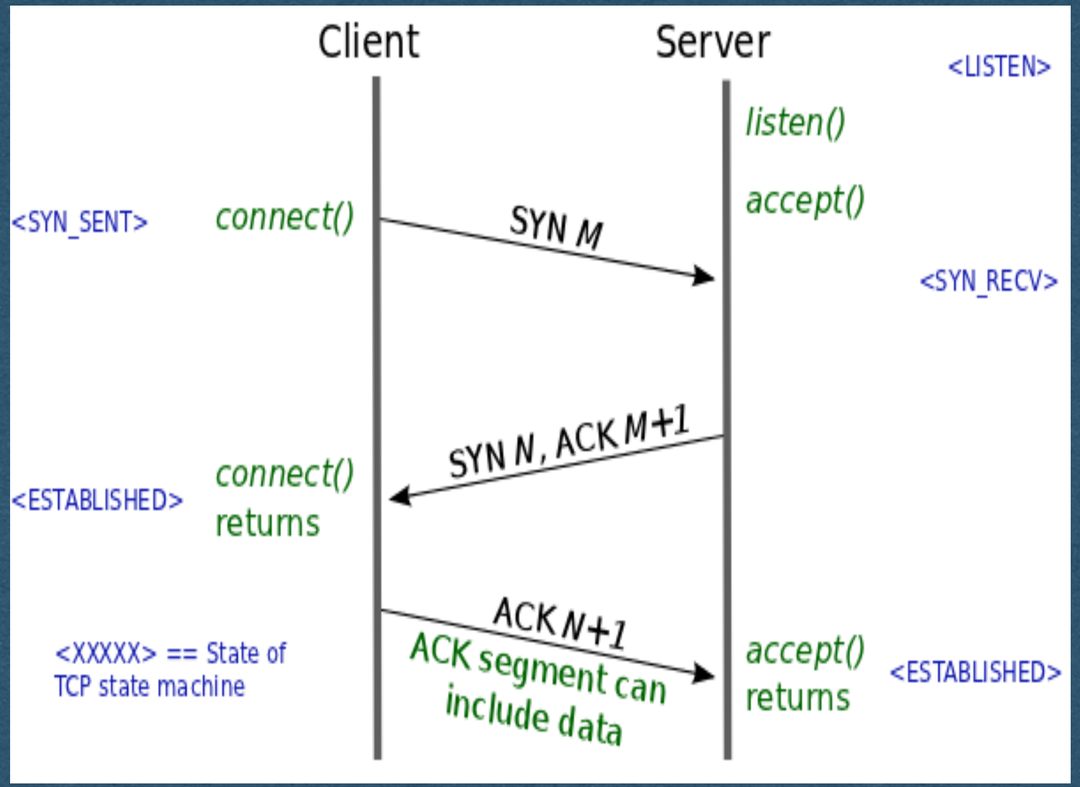
Transmission Control Protocol

Transmission Control Protocol (TCP)

Makes the Internet reliable

- Detect and resend dropped packets

- Adds port numbers to identify specific programs
- Connect to a port number/IP address combination (TCP/IP)
  - 127.0.0.1:8080



TCP 3-way Handshake

TCP/IP in CSE312

- Use libraries to do all this for us
- Assume TCP/IP works and that we have reliable communication over the Internet
- Freely send and receive messages (As bytes)

- Your code (HW) will start with HTTP

- Much deeper TCP/IP coverage, and more, in CSE489: Modern Networking Concepts!