

# CS121: Our Digital World

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# + Introductions

- What is your name?
- What year are you?
- Where is your hometown?
- What is your major?
- What do you hope to be/do when you graduate?

# + M&Ms

- Brown: Describe what you hope to get out of this course
- Yellow: Why did you sign up for this course?
- Green: Describe something you recently read that is related to the Internet
- Red: Describe something that you want to learn from this course
- Orange: Describe what you already know about the topic of this course
- Blue: Describe your most recent success

# + Activity: Fill out the Questionnaire

- Go to: <http://zeus.cs.pacificu.edu/shereen/cs121sp12/>
- Explore the site:
  - Find the course schedule
  - Find the syllabus
  - Find the questionnaire
- Complete the questionnaire
- Print it out
- Staple pages together
- Turn it in to instructor

# + Topics

- Aspects of the Internet
  - Ethical
  - Social
  - Economic
  - Political
  
- Give examples of each of the above:
  - Ethical:
  - Social:
  - Economic:
  - Political:

# + Syllabus

- Go through syllabus:
  - Blog
  - Participation
  - Midterm
  - Final Project

# + Activity: Blog

- Go to [wordpress.com](http://wordpress.com) and create a new blog
- For your blog you must:
  - Add a link to the course website:  
<http://zeus.cs.pacificu.edu/shereen/cs121sp12/>
  - Add an image
- Change the theme to one that represents your personality





# + Basics of the Internet


- To understand how the Internet impacts and affects our lives, we need to understand:
  - What it is?
  - How it works?
  - A little history

# + Activity: Watch this video









- <http://www.commoncraft.com/video/world-wide-web>




**World Wide Web**  
*in Plain English*

A short explanation of the concepts and tools that make up the World Wide Web.



Want to download or embed this video? [Login](#) or [Learn About Membership](#).

Languages:        

 Email  Like  Tweet

# + How does the Internet work?

- Internet is a collection of computer networks
- They use the standard Internet protocol suite (TCP/IP)
- Networks are connected through special gateways or routers

# + Internet Addresses

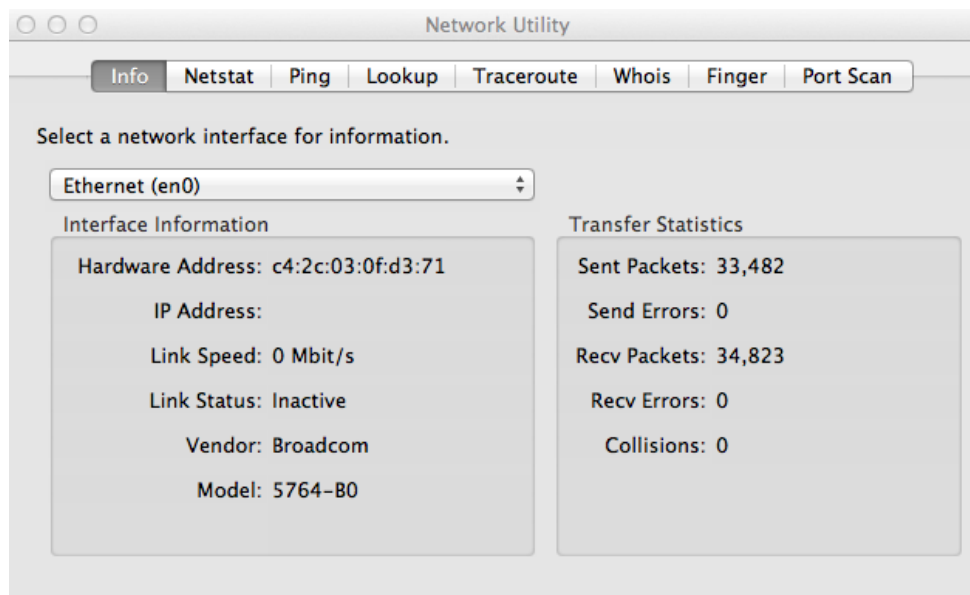
- Every computer connected to the Internet must have a unique address
- Address is in the form `xxx.xxx.xxx.xxx` where `xxx` represents a number between 0-255
- This address is called an IP address

# + ping

- You can use a program to send a ping message to any computer on the Internet
- The pinged computer will send a reply
- The ping program will countdown until it gets a reply
- The ping program will accept an **IP address** or a **domain name**

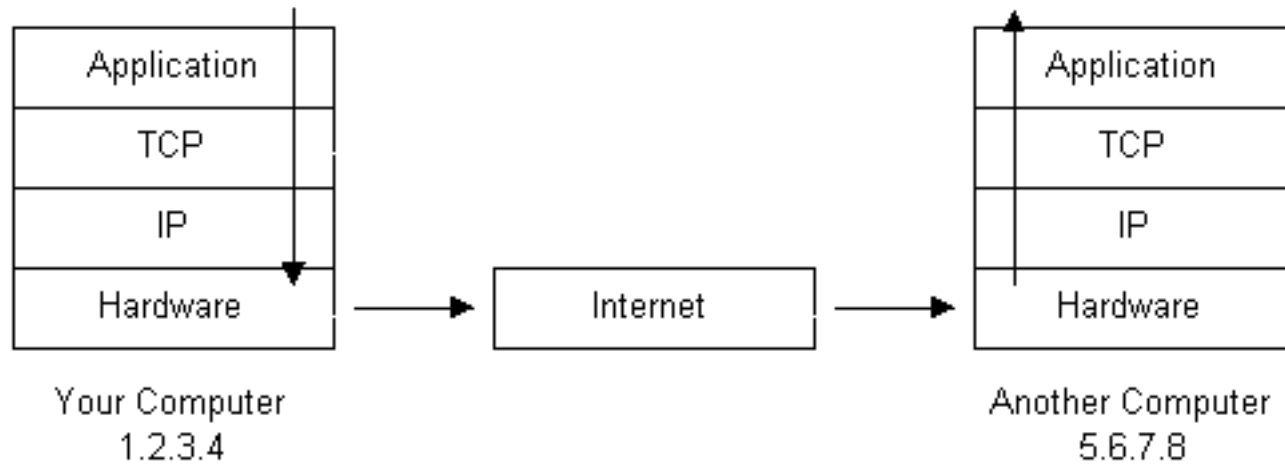
# + Activity: ping

- Try it now! Go to Applications -> Network Utility

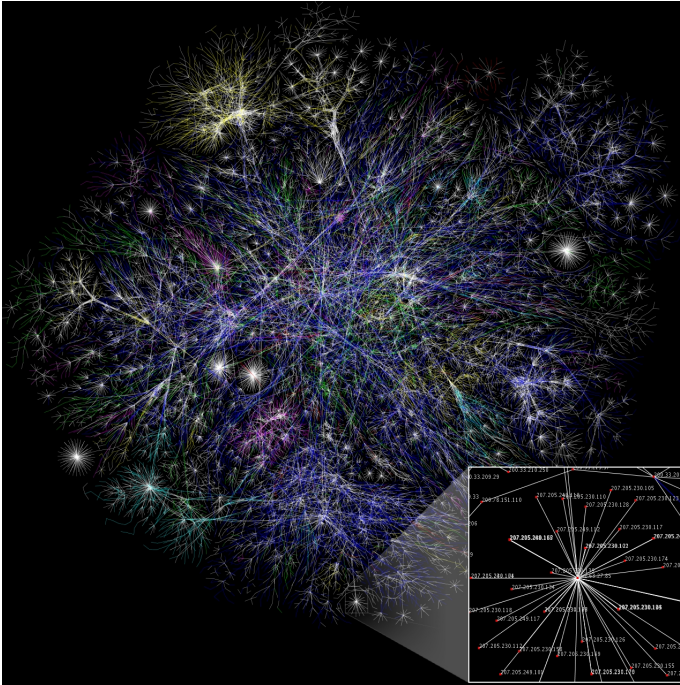


- What is your IP address?

# + How is information transferred?



# + Internet Infrastructure

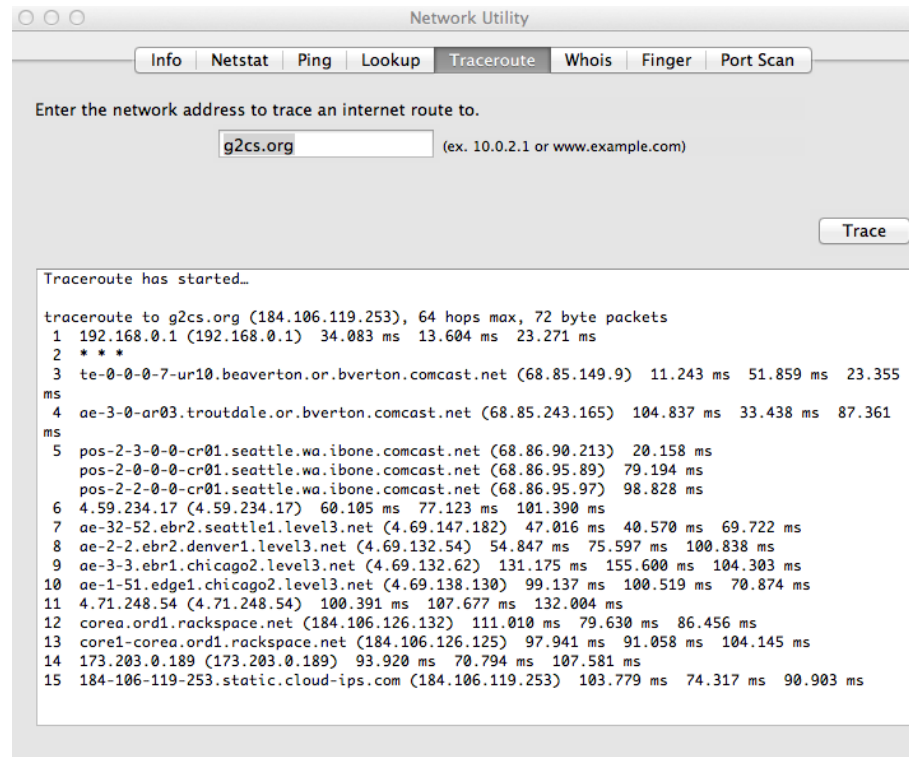


- English: Partial map of the Internet based on the January 15, 2005 data found on [opte.org](http://opte.org).
- Each line is drawn between two nodes, representing two [IP addresses](#).
- The length of the lines are indicative of the delay between those two nodes. This graph represents less than 30% of the [Class C](#) networks reachable by the data collection program in early 2005.
- Lines are color-coded according to their corresponding [RFC 1918](#) allocation as follows:
  - Dark blue: net, ca, us
  - Green: com, org
  - Red: mil, gov, edu
  - Yellow: jp, cn, tw, au, de
  - Magenta: uk, it, pl, fr
  - Gold: br, kr, nl
  - White: unknown



# + Activity: Traceroute

- Try it now! Go to Applications -> Network Utility

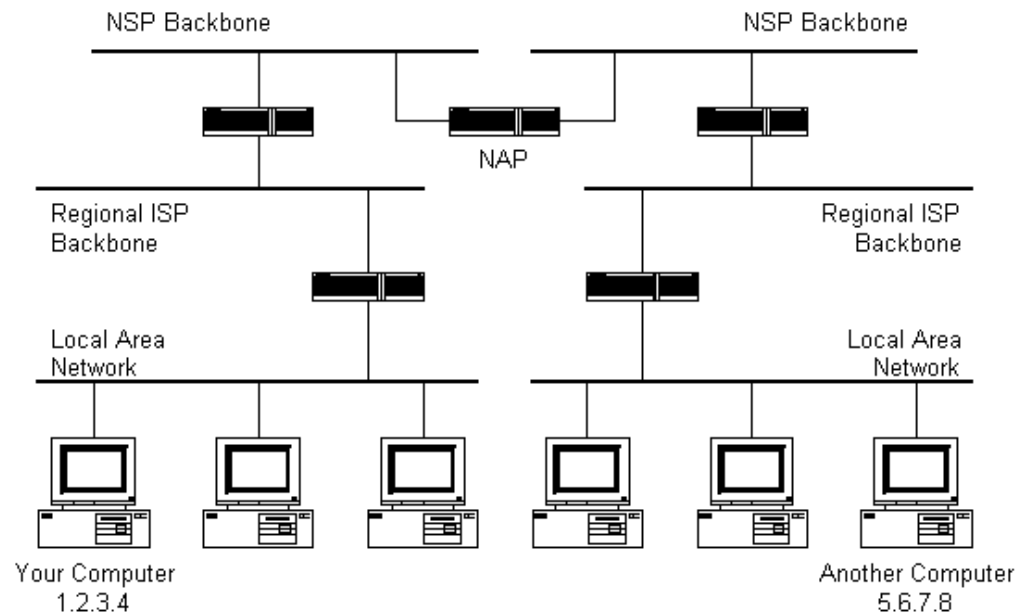


The screenshot shows the Network Utility application window. The 'Traceroute' tab is selected. The input field contains 'g2cs.org' and a 'Trace' button is visible. The output shows the following traceroute results:

```
Traceroute has started...
traceroute to g2cs.org (184.106.119.253), 64 hops max, 72 byte packets
 1 192.168.0.1 (192.168.0.1) 34.083 ms 13.604 ms 23.271 ms
 2 * * *
 3 te-0-0-0-7-ur10.beaverton.or.bvverton.comcast.net (68.85.149.9) 11.243 ms 51.859 ms 23.355
ms
 4 ae-3-0-ar03.troutdale.or.bvverton.comcast.net (68.85.243.165) 104.837 ms 33.438 ms 87.361
ms
 5 pos-2-3-0-0-cr01.seattle.wa.ibone.comcast.net (68.86.90.213) 20.158 ms
  pos-2-0-0-0-cr01.seattle.wa.ibone.comcast.net (68.86.95.89) 79.194 ms
  pos-2-2-0-0-cr01.seattle.wa.ibone.comcast.net (68.86.95.97) 98.828 ms
 6 4.59.234.17 (4.59.234.17) 60.105 ms 77.123 ms 101.390 ms
 7 ae-32-52.ebr2.seattle1.level3.net (4.69.147.182) 47.016 ms 40.570 ms 69.722 ms
 8 ae-2-2.ebr2.denver1.level3.net (4.69.132.54) 54.847 ms 75.597 ms 100.838 ms
 9 ae-3-3.ebr1.chicago2.level3.net (4.69.132.62) 131.175 ms 155.600 ms 104.303 ms
10 ae-1-51.edge1.chicago2.level3.net (4.69.138.130) 99.137 ms 100.519 ms 70.874 ms
11 4.71.248.54 (4.71.248.54) 100.391 ms 107.677 ms 132.004 ms
12 corea.ord1.rackspace.net (184.106.126.132) 111.010 ms 79.630 ms 86.456 ms
13 core1-corea.ord1.rackspace.net (184.106.126.125) 97.941 ms 91.058 ms 104.145 ms
14 173.203.0.189 (173.203.0.189) 93.920 ms 70.794 ms 107.581 ms
15 184-106-119-253.static.cloud-ips.com (184.106.119.253) 103.779 ms 74.317 ms 90.903 ms
```

# + Internet Routing Hierarchy

- Does every computer on the Internet know where other computers are?
- Do packets get “broadcast” to every computer?



# + Domain Names

- How does your computer know that g2cs.org is 184.106.119.253?
- Domain Name Service (DNS)
- Distributed database that keeps track of computer names and their corresponding IP address

# + So, what is the world wide web?

- The world wide web (WWW) is a service of the Internet
- Examples of other services:
  - Email
  - File Sharing (FTP)
- WWW is a system of interlinked hypertext documents

# + **Activity:** Find the answers to the two questions below

- How many people use the Internet today?
- What has the growth been like since 1995?

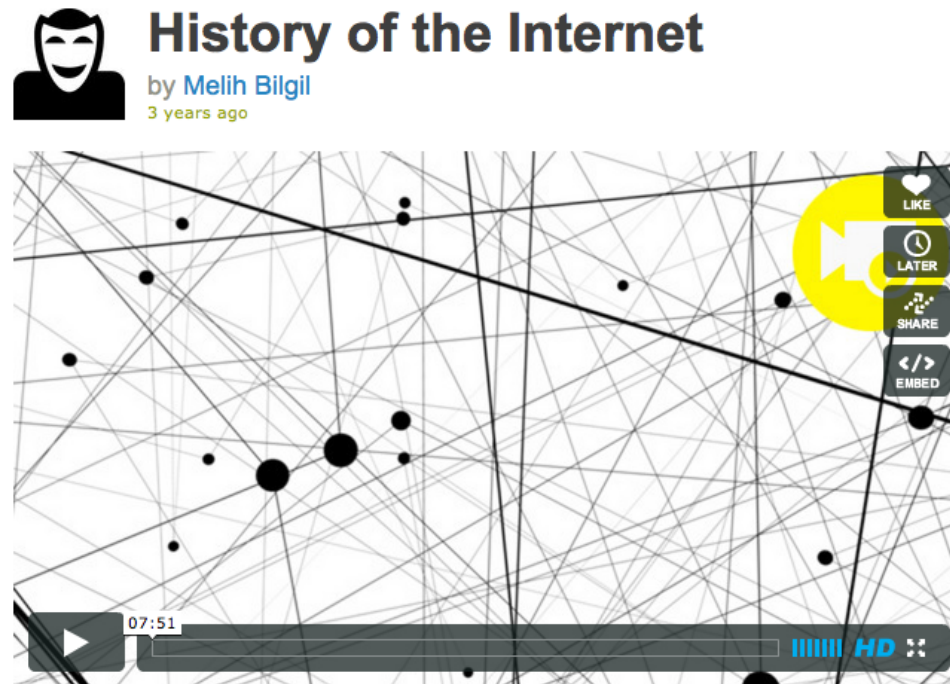
# + Who invented the Internet?



# + Brief History of the Internet

- Watch the following video:

<http://vimeo.com/2696386?pg=embed&sec=2696386>



# + Key Moments in the History of the Internet

- Based on the video we just watched, list 5 key moments in the history of the Internet:
  - 1.
  - 2.
  - 3.
  - 4.
  - 5.



# + Keywords

- TCP
- IP
- Packets
- Ping
- Traceroute
- Internet
- WWW
- Router or gateway
- Packet switching
- Server
- Domain names
- Domain name service
- DNS
- Database
- URL
- ARPANET
- Web browser
- FTP
- Hypertext