

# The Basic Internet **Services**

So far, we've covered technical  
(hardware and protocol) aspects of  
the Internet ...

- The Dance of the Magnetic and Electric
- The Wiring of the Internet

# Original Basic Internet Services

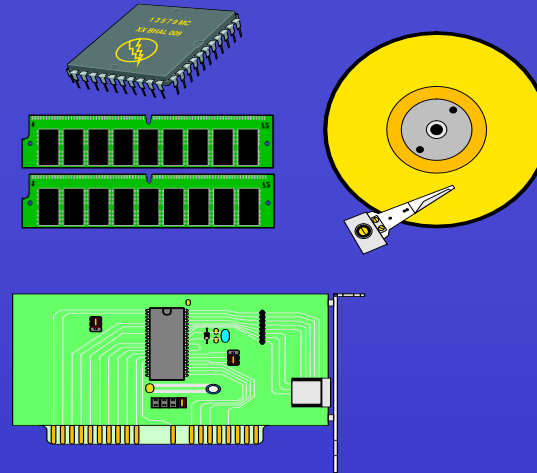
- SERVICES are those things you can do once you've established the technical link and communication **protocol**
  - ➡ Telegraph
  - ➡ Email
  - ➡ TELNET
  - ➡ FTP
  - ➡ HTTP
  - ➡ And...?

# Email – since 1962

- A reliable system of transferring text messages from one person to another person over the network infrastructure
- Store and Forward technology
- The #1 use of the Internet today

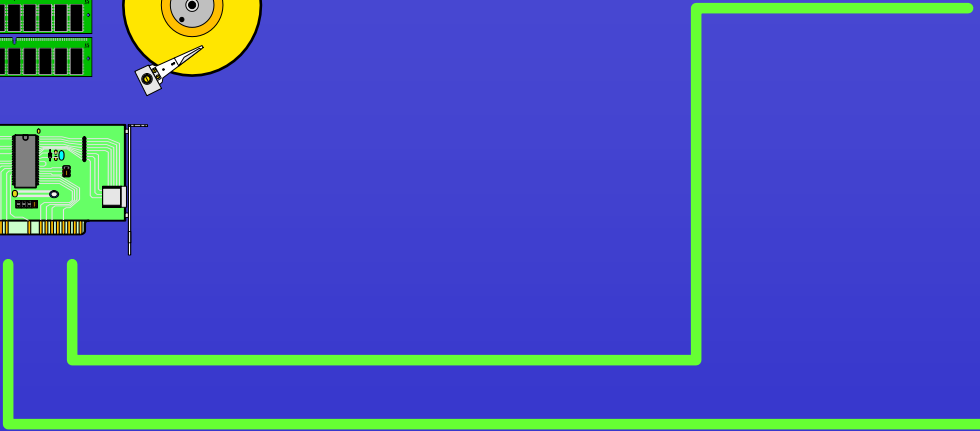
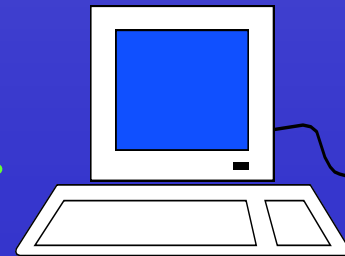
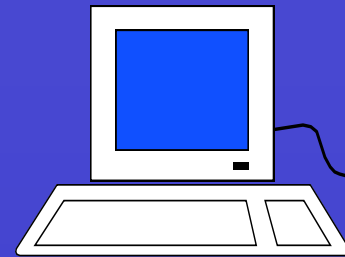
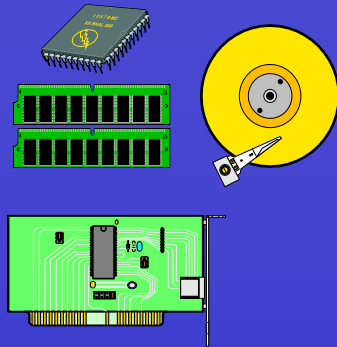
# Email - Store and Forward

- Post Office stores messages from the Internet at all hours



# Email - Store and Forward

- Users collect messages from the Post Office at their leisure



# Asynchronous

- Participants do not need to be engaged at the same time
- The data can take it's sweet time getting from source to destination
- The time lag between sender and receive can range from milliseconds to months

# Email -- only **ASCII** text

- Only text email can be sent over Internet
- Binary files (computer code, graphics, word processing) must be converted to text -- **encoded**
- Coding/decoding software (MIME) built into today's email clients
- Most images today are links to files stored (and tracked) on Web sites



Remember when I told you about the dance between MAGNETIC and ELECTRIC and how working on the Internet was simply an extension of the dynamic of copying files from some MAGNETIC storage to your computer's ELECTRIC memory?

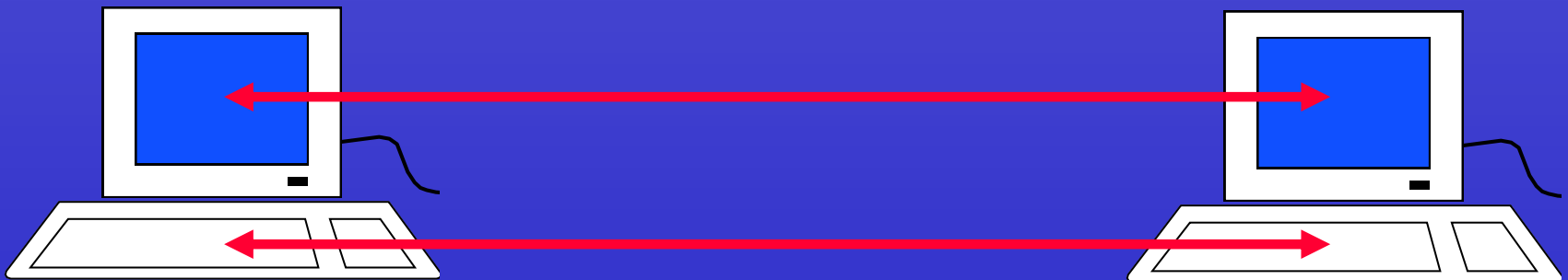
- **I lied**

# Well, actually...

- For the most part this dynamic holds true, especially in the case of FTP and the World Wide Web
- TELNET uses a different model
- Acts as a substitute for the connections between your ELECTRIC memory and your monitor and keyboard

# TELNET (aka Remote Desktop)

- Runs a program on a remote computer, like a terminal off a mainframe
- Terminal is “dumb” - it simply displays the results from the “host” and sends keystrokes



# FTP: at Your Service Since 1971

- File Transfer Protocol allows access to remote computers and lets you send and receive files from these computers



# FTP: The basic steps

- Start-up your FTP software
- Give your FTP client an address to connect to
- Log in to the remote site
- Look around the directories for files
- Set the transfer mode (optional)
- Get the file(s) you want
- Quit

# Basic FTP commands:

- **dir** -- list files in current directory
- **cd** -- change directory
- **get** -- get file (name)
- **mget** -- get many files (names or wildcard)
- **binary** -- set transfer to binary mode
- **ASCII** -- set transfer to ASCII mode
- Most FTP servers are case sensitive, so type carefully.

# FTP: In the beginning

- FTP'ing was miserable for a long time
- Working from character-based “prompt”, the user was required to remember a mess of arcane commands
- You needed to know the name of the computer, the complete directory path, and the correct spelling of the file name
- You needed to type very carefully

# FTP: Being “anonymous”

- Most sites that allow outside access allow the user ID "anonymous".
- The ID "anonymous", gains access to those files that are available to anyone.
- Some (few) require “guest” as password



# FTP: Coming of Age

- To make it possible to browse FTP sites, a standard way to make a “menu” of the files in a directory was devised
- This menu file was the first thing transferred to the client computer
- The user could press the number of a menu item and have it transferred
- GOPHER in 1991

# HTTP: FTP Matures at Age 27

- The World Wide Web is nothing but FTP with a highly graphical, user friendly interface. First defined in 1997.
- Menus and links all converted to HTML
- Your “**browser**” software reads these HTML files and composes your screen
- Still able to simply transfer a file

# HTTP: The Dominant Service

- Hypertext Transfer Protocol
- Very similar to FTP
- Files contain HTML
  - code that links to other files in the Internet
  - instructions for laying out the page
  - added ability to include graphics and other binary files

# Learning to Share

- Originally, some found the idea foreign
- A brain-bending sort of phenomena
- Share a portion of your file storage with everyone in the world
- Now, over 30 million servers

# Services, Services, Services...

- SMS
- VoIP
- Video and audio streaming
- Video and audio broadcast
- IP multicasting
- Quality of Service issues

# Whither Goest the Internet?

- Services remain the one area where the most surprising developments can take place
- With the infrastructure in place, the possibilities are endless
- What's next? Got game?



**The End**