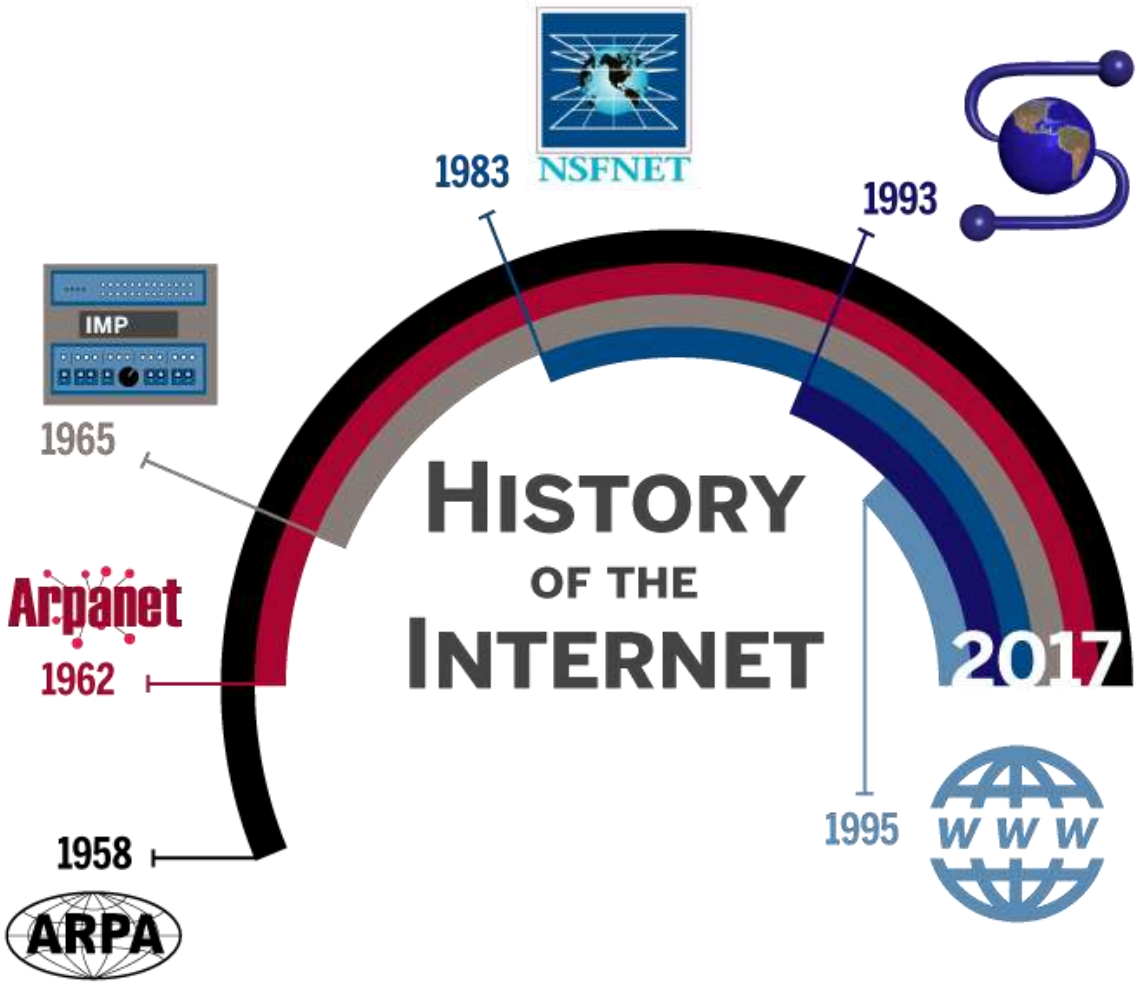
Chapter 9

The Internet & Mobile Multimedia

Table of contents

- Internet History
- Internetworking
- Multimedia on Web
- Mobile Multimedia
- Mobile Hardware



.: Internet History

- The Internet began as a research network funded by the Advanced Research Projects Agency (ARPA) of the U.S. Defense Department in **1969**.
- January 1, **1983** is considered the official birthday of the Internet. Prior to this, the various computer networks did not have a standard way to communicate with each other. A new communications protocol was established called Transfer Control Protocol/Internetwork Protocol (TCP/IP).
- In **1989**, the National Science Foundation (NSF) took over the management of the ARPANET.

.: Internetworking

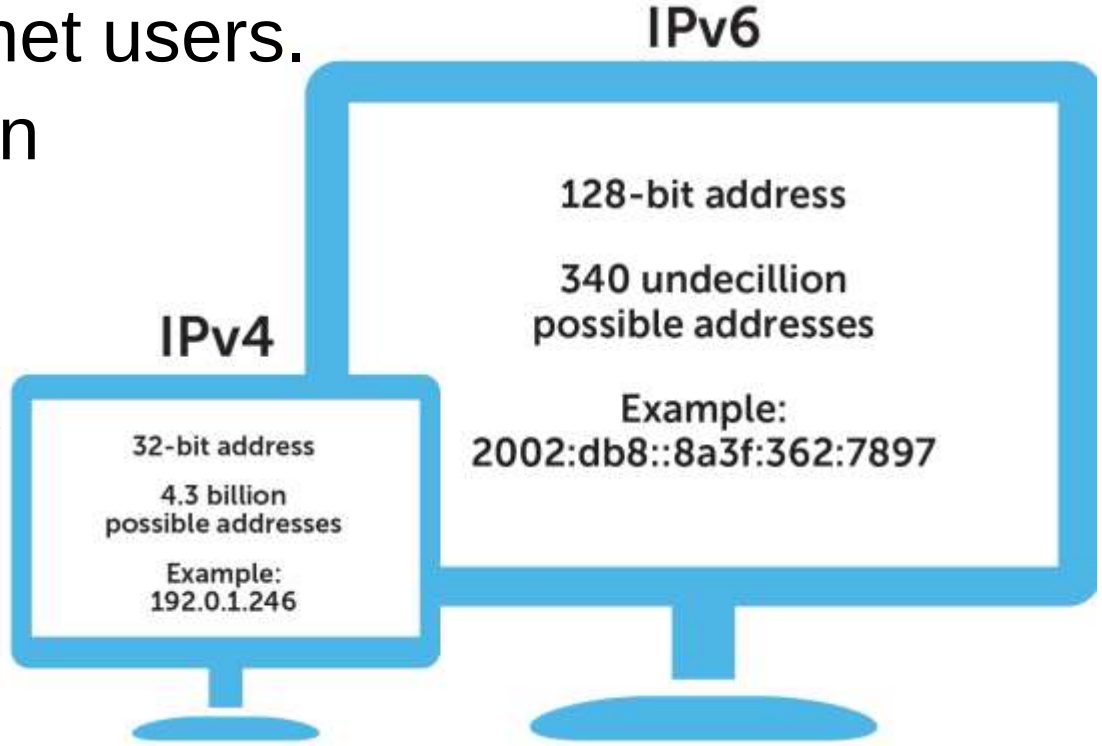
- A network is a **cluster of computers**.
- In a network, the **server** computer provides network services to the client computers on that network.
- Several **local area networks** (LANs) can be interconnected using gateways and routers to form a **wide area network** (WAN).
- LANs and WANs can be connected to the Internet through a server that provides Internet software and physical data connection.

- TCP/IP
  - The **Transmission Control Protocol** (TCP) and the **Internet Protocol** (IP) are the protocols for communication on the Internet.
  - A stream of data that is sent over the Internet is first **broken down into packets by the TCP**.
  - Data packets include the receiving computer's address, a sequence number, error correction information, and a small piece of data.
  - **IP is responsible for sending the packet** to its destination along a route

- Bandwidth **bottlenecks** can be avoided using the following options:
  - **Compress** data before transmitting.
  - Oblige users to **download data only once**, and then store that data on the system's hard disk.
  - Design multimedia elements to be efficiently **compact**.
  - Design **alternate low-bandwidth** and high-bandwidth navigation paths to accommodate all users.
  - Implement incremental **streaming** methods

- Internet addresses
  - The **Domain Naming System** (DNS) assigns names and addresses to computers linked to the Internet.
  - **Top-level domains** (TLDs) were established as categories to accommodate Internet users.
  - The two-letter US domain is based on political boundaries.
  - The IP address or Internet address

  is made up of four numbers separated by periods



IPv4 vs IPv6

- Each Internet service is implemented on an Internet server by dedicated software known as a **daemon**.
- Daemons are agent programs that **run in the background** and wait to act on requests.
- The Internet supports services such as the Hypertext Transfer Protocol (**HTTP**) and the Post Office Protocol (**POP**).
- The other services provided by the Internet include https, ftp, gopher, usenet, telnet, Internet Relay Chat (IRC), the Simple Mail Transport Protocol (SMTP), and mud

.: Multimedia on Web

- The World Wide Web was designed by **Tim Berners-Lee**.
- It is a **protocol for linking** multiple documents located on computers anywhere within the Internet.
- The Hypertext Transfer Protocol (**HTTP**) provides rules for a simple transaction between two computers on the Internet.
- Hypertext Markup Language (**HTML**) is a document format for presenting structured text mixed with inline images

- Tools for the World Wide Web
  - Web servers
  - Web browsers
  - Search engines
  - Web page makers and site builders
  - Plug-ins and delivery vehicles

.: Mobile Multimedia

- Tablets, readers, and smartphones delivering text, images, audio, and video.
- As mobiles entered daily life, **lives improved**.
- The office is now **at your fingertips**, at any time and from anywhere.
- Social media has reconnected friends, family, and classmates by making **communication easier** and more interactive through multimedia.
- E-mail and text messages and video clips are **everywhere**.

Mobile and multimedia Internet is altering our :

quality of life, our **quality of health**,

the way we **interact socially**, the environment,

schools and education, the **retail marketplace**,

styles of **employment and work**,

and the organizational patterns

that drive **business** and **economies.**

- **Retail** – Retailers can “push” tailored messages about store specials and sales to shoppers (marketing)
  - Researching product information, comparing prices, mobile pay
- **Education** – Quizzing tools, Chat and Online Discussion Forums
  - Blended Learning, learning through sound, video clips, graphical display, internet search
- **Travel** – Hotel/flight bookings, advance insight on your holiday destination via Virtual reality (VR)
  - Navigation, marketing, weather prediction

.: Multimedia Hardware

- It is the combination of **hardware**, **operating system**, and **system programming** features that differentiates the many brands of tablets and smartphones available in the marketplace
- A Subscriber Identity Module (**SIM**) card can be seamlessly swapped among handsets
- **3G** and **4G** are communication protocols that govern this movement of information on the radio connection between handset and tower.
- **LTE** (Long-Term Evolution) and **WiMAX** (Worldwide Interoperability for Microwave Access) are competing 4G technologies
- **Wi-Fi** provides a high-speed connection to wireless access points or hotspots.
- **Bluetooth** is a very short-range, low-power radio technology to interconnect up to seven devices by radio.

- **Android** is an open-source operating system for mobile devices based upon the Linux kernel and maintained by Google.
- **iOS** is a proprietary, closed source operating system developed and owned by Apple.
- Other OSs: Blackberry, Symbian, S40, Windows, BADA
  Maemo, Meego Lineage, MIUI
- Programmers writing apps for **iOS use Objective C**; they use **Java for Android devices**.
- Other programmers use **HTML5**, **CSS** and **JavaScript** to construct hybrid apps and save themselves the difficulty of learning multiple complex languages.

- The **responsive web design** (RWD) movement is developing methods to deal with the difficulty of programming for the many screen sizes in the mobile and desktop worlds. Typically, the advice is to **consider the smallest screen first**


Thank
you!


Q&A