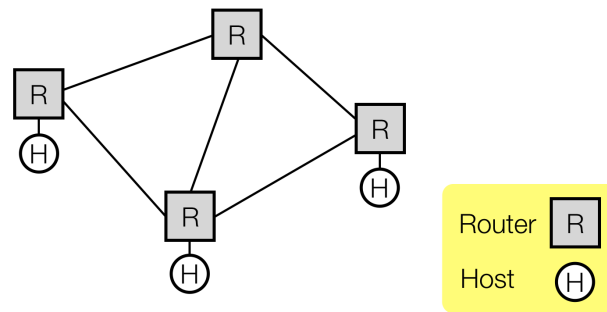


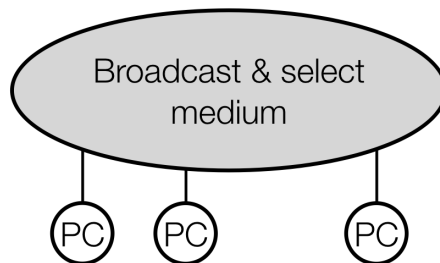
Networking Fundamentals (I)

A Brief History

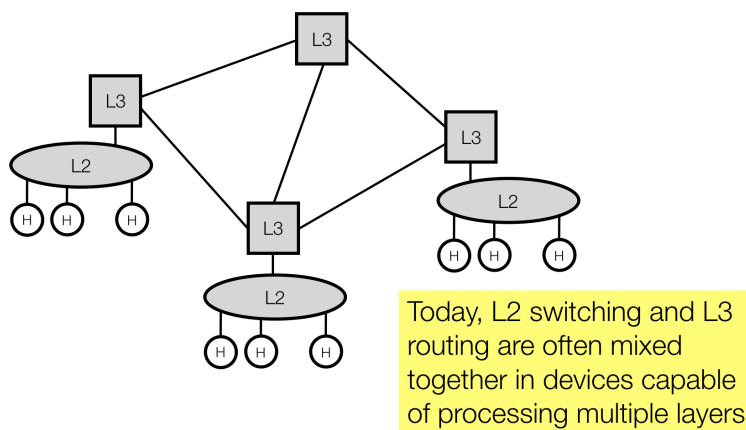
- Bell Labs Invents Modem (1958)
 - Digital signals to analog/electrical signal
 - enabled the communication between computers
- The first paper on packet switching theory by Leonard Kleinrock at MIT in July 1961 (one of the two key steps to make computers talk together)
 - A message is broken into a number of parts that are sent individually over the optimum path for each part, which allows the same data path shared among many users in the network.
 - Circuit-switched:
 - networks for regular voice telephone network
 - communication circuit (path) for the call is set up and dedicated to the participants in that call.
- “Galactic Network” concept by J.C.R Licklider of MIT in August 1962
 - first recorded description of social interactions that could be enabled through networking
 - envisioned a globally interconnected set of computers through which everyone could quickly access data and programs from any site
 - very much like the Internet of today, in spirit
- The first computer network was built in 1965 (the other key step)
 - to explore Kleinrock’s theory,
 - connected the TX-2 computer in MA and the Q-32 in CA with a low speed dial-up telephone line
 - first WAN ever built
 - confirmed that packet switching offers the most promising model
- The ARPANET (Advanced Research Projects Agency Network)
 - the study of ARPANET starts from 1967
 - an early network used to study packet switching
 - the first network implemented the TCP/IP protocol suite (1982)
 - the network grew to 23 hosts by 1972
 - many countries started to build their own ARPANET (e.g., France 1972) and connected to other countries (e.g., the first international connection to the ARPANET is made by University College of London (England) via NORSAR (Norway), 1973; around 1980’s continents: US-Europe, Asian-Internet)
- Therefore, Packet-switched networks became popular (70’s - 80’s)
 - the networks were long-distance point to point (leased / low-speed dial-up telephone line) lines
 - but allows the same data path shared among many users in the network
 - hosts by then were typically large room-size computers



- **Local area networks** (late 80's, early 90's)
 - smaller personal computers gradually replaced the large room-size computers
 - so, the personal computers at a site were connected together based on broadcast & select medium



- more and more PCs join the broadcast & selected medium. To better support and manage network, Ethernet (L2) switches are introduced to L2 broadcast & select medium.
- **Internet** - a network **INTER**connect **NET**works (today)



REF: <https://www.internethalloffame.org/internet-history/timeline>

Disclaimer: Notes adapted from the textbook and online resources.