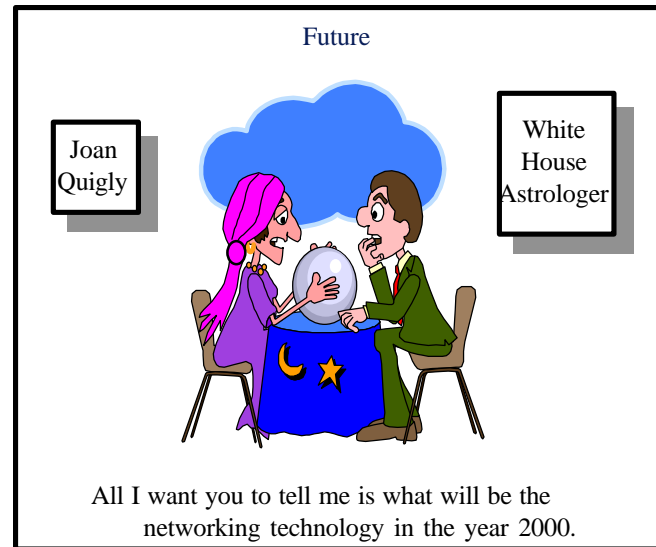


Networking Trends



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- ❑ Networking Trends
- ❑ Life Cycle of Technologies

Trend: Networking is Critical

- ❑ Communication more critical than computing
 - ⇒ Bus performance vs ALU speed
 - ⇒ I/O performance vs SPECMarks
- ❑ User Location:
 - ❑ 1960: Computer room 1970: Terminal room
 - ❑ 1980: Desktop 1990: Mobile
- ❑ System Extent:
 - ❑ 1980: 1 Node within 10 m
 - ❑ 1990: 100 nodes within 10 km

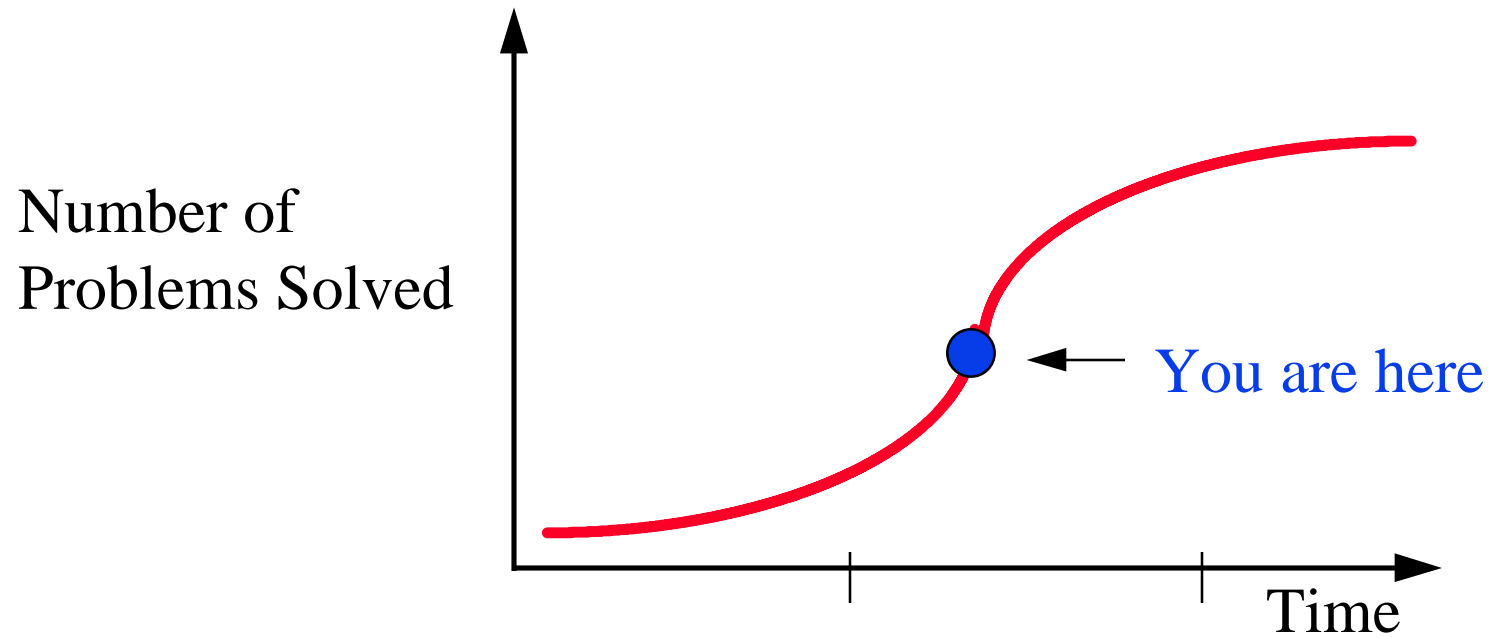
- ❑ Last 10 years: Individual computing
Next 10 years: Cooperative computing
- ❑ Past: Corporate networks
Future:
 - ❑ Intercorporate networks
 - ❑ National Info Infrastructures
 - ❑ Global Info Infrastructures

Trend: Telecommunication and Networking

- From computerization of telephone traffic switching to telephonization of computer traffic switching.

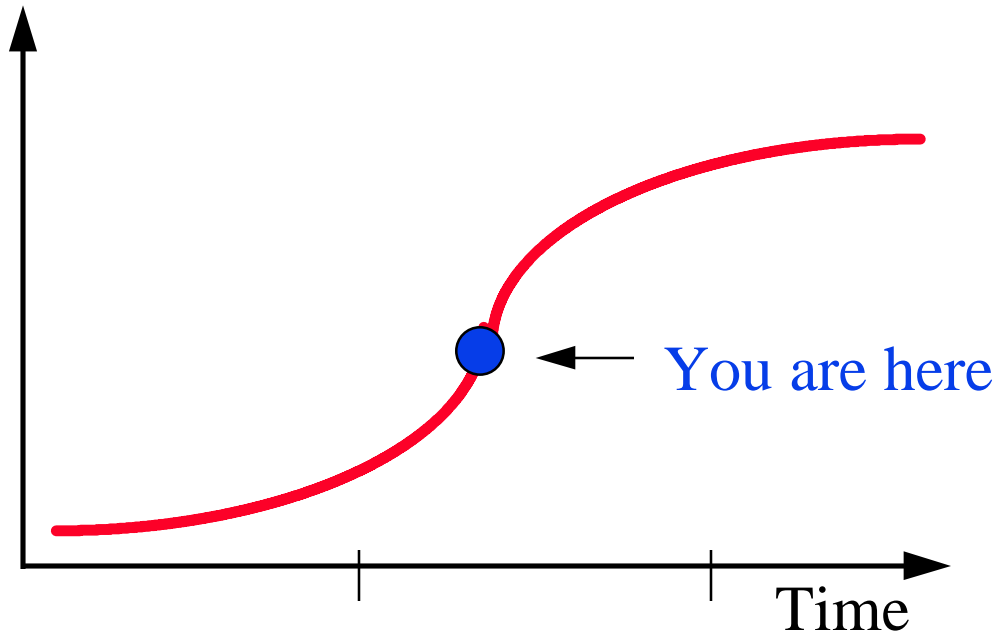


Life Cycles of Technologies

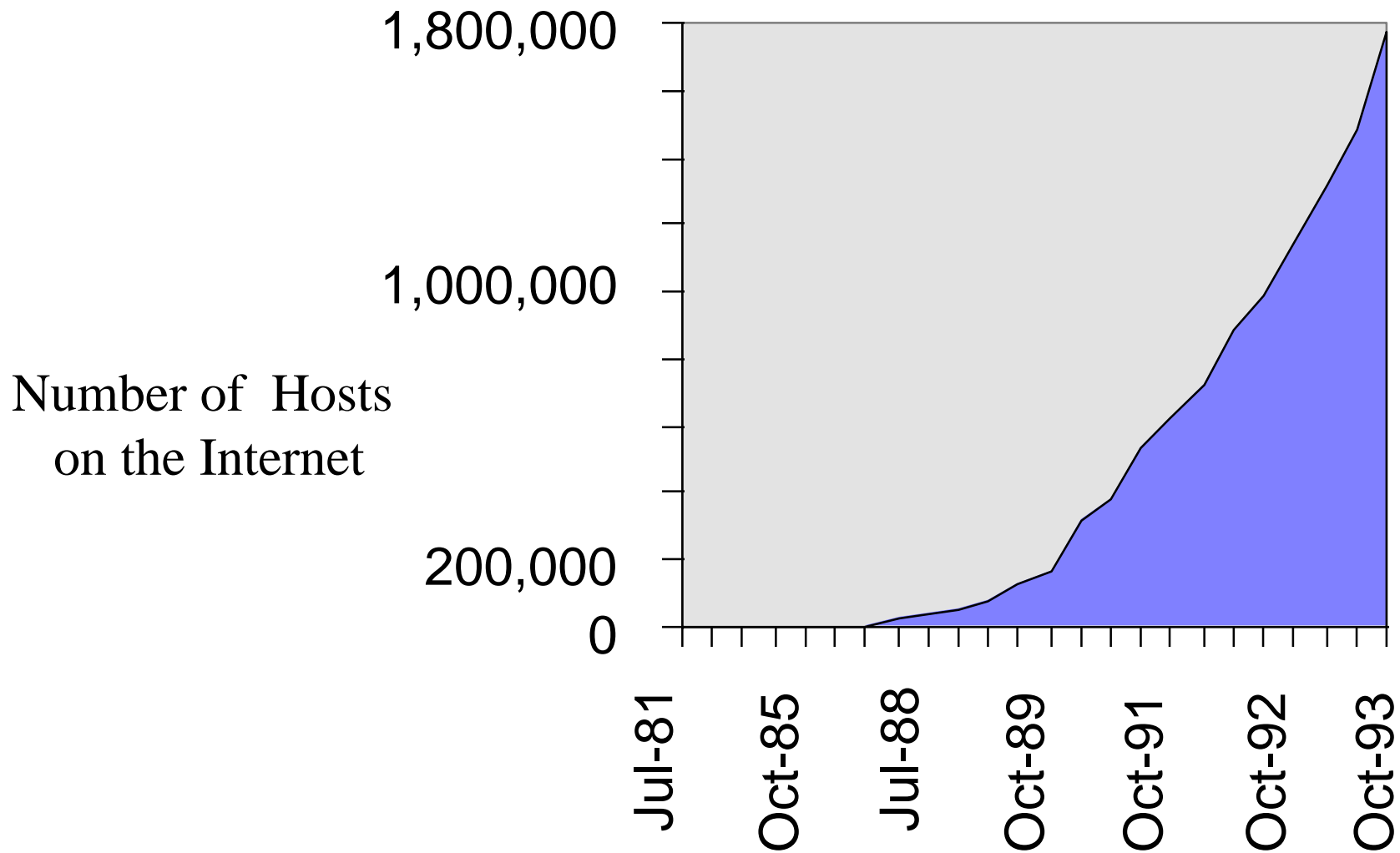


Life Cycles of Networking Technology

Number of Hosts
Bytes per Hosts
Number of Networks
MIPS
Memory Size
Storage



Trend: Exponential Growth

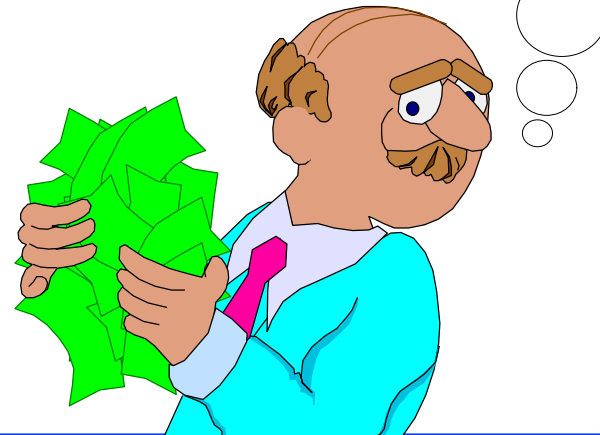
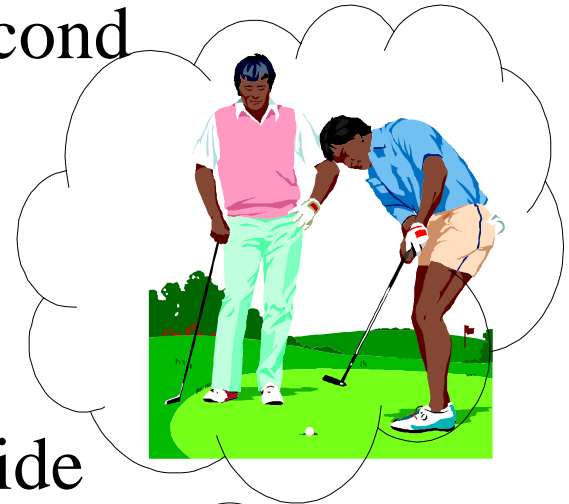


Networking in Social Fabric

- ❑ USENET: Ten million news articles/month
- ❑ 18 on-line coffee houses in San Francisco
- ❑ National Public Radio Program
- ❑ Supreme court decision within one day
- ❑ Real estate, on-line catalog
- ❑ 137 countries reachable via Email

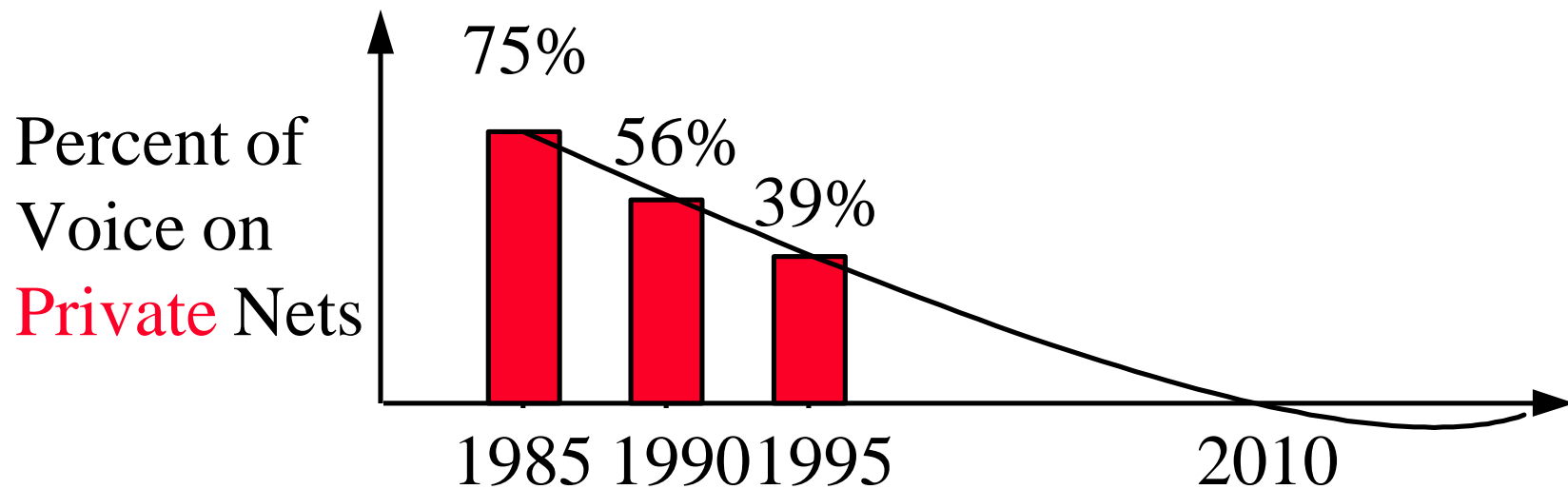
Trend: Profusion of Information

- ❑ High Technology \Rightarrow Less labor \neq More vacation
- ❑ High bandwidth \Rightarrow More bits per second
- ❑ Hundreds of telegrams per day
- ❑ Short product development cycles
- ❑ Short technology cycles
- ❑ Research and development side by side



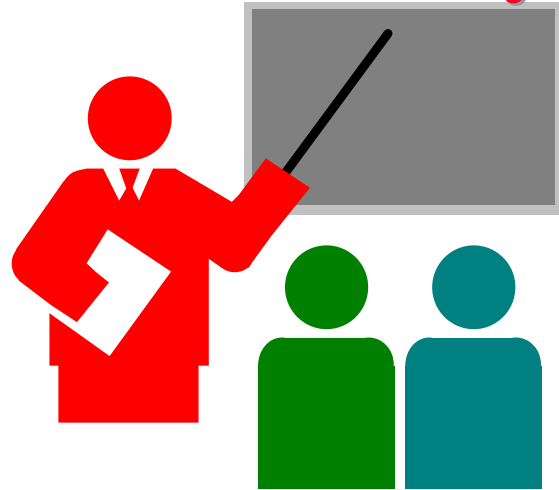
Trends in Applications

- ❑ Little Voice
- ❑ AT&T: 125 to 130 M calls/day @ 5 min/call
64 kbps/call \Rightarrow 28.8 Gbps = 1/1000 of one fiber
- ❑ 200 Million X 24 hr/day X 64 kbps = 12.8 Tbps



◆ Ref: IEEE Spectrum, August 1992, p 19.

Summary



- ❑ Networking is critical and growing exponentially.
- ❑ Computer and Telecommunications industry merging
- ❑ Networking is becoming an essential part of social fabric