



# Panel: Visions of Networking in 2024

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# The Panelists

- Dr. Kevin Jeffay  
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University of North Carolina
- Dr. Peter Steenkiste  
Professor of Computer Science & EE  
Carnegie-Mellon University
- You! Please participate!



# Purposes of the Exercise

- Provoke thought—expand horizons
- Stimulate discussion
- Have fun!



# Panel Format

- Scene-setting: Looking Back 20 years
- Panelist presentations
- Audience discussion
- Panelist reprise
- More discussion



# State of the Art: 1984



- Computers mainly in workplaces
  - Minicomputers (Vax, Sequent, Data General, ...)
  - (IBM) Personal Computers running DOS -- or CP/M!
  - Some workstations had bitmapped displays
  - Performance measured in MIPS
  - First Macintosh: 128k RAM
- Hard disks were very expensive
  - Many diskless workstations running NFS
  - Booted over the network from file servers

# State of the Networking Art: 1984



- Fastest (dialup) modem available: 2400 bps
  - You dialed in to a "bulletin board system" (BBS)
- Cost of a 9600 bps dedicated line: \$5000/mo.
- 1700 Bell Labs (AT&T) employees working on software for #5ESS
- OSI and X.25 were major players
- TCP/IP standard was 2 years old
- DNS just introduced

# State of the Networking Art: 1984

- Email without Spam!
  - Source-routed: ihnp4!gatech!harvard!...



# Extrapolating to 2024...



- Typical home will have ~1Gps to the doorstep
- 99.9999% of all email will be SPAM
  - 1 out of 1000000 (or more) mail messages will **not** be spam
- Storage will be “too cheap to meter”



# Questions

- IPv\_? or something different?
- Ubiquitous network access?
- Many service providers or few?
- Will security still be an issue?

