Massachusetts Institute of Technology

Voice (and more) over IP

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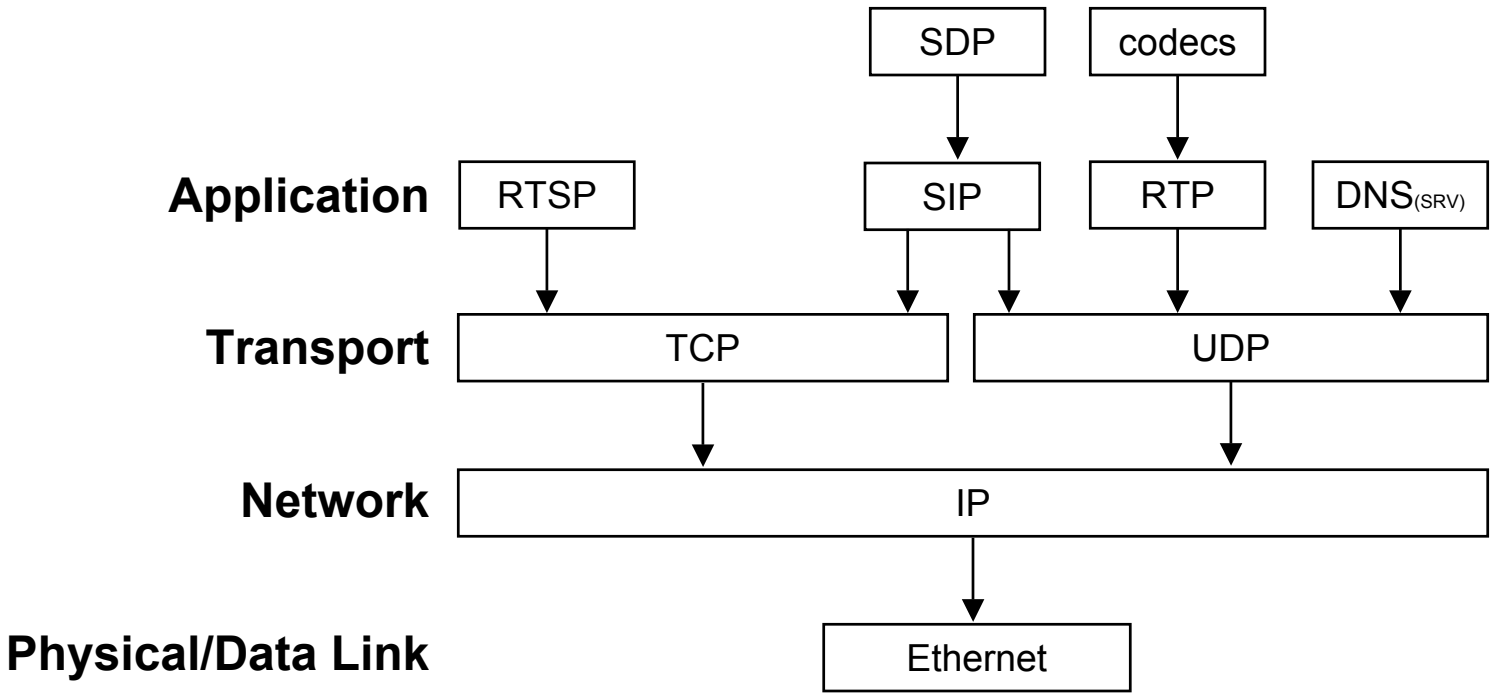
Outline

- VoIP basics
- Standards
- Network implications
- Computer implications
- (and more)
- Demonstrations
- More?

VoIP Basics

- Voice encoded in IP packets
- Used today
  - By carriers as a more efficient way to transport voice
  - By service providers to provide alternatives to POTS
- Protocols
  - RTP - Real-time Transport Protocol
    - for carrying voice or video
  - H.323 - Packet-Based Multimedia Communications Systems
    - actually a group of protocols
    - has been used widely for video conferencing
  - SIP – Session Initiation Protocol
    - more widely used for voice
    - supports any media
- CODECs
  - Voice: G.711, G.729, GSM, iLBC, etc.
  - Video: H.263, H.264, etc.

Protocol Layers



Network Implications

- Bandwidth
  - About 100kbps for G.711
  - Lower bandwidth CODECs are available
  - And higher bandwidth CODECs for better quality voice
- Packet loss
- Delay
- Jitter
- Network Address Translation (NAT)
  - Use STUN (Simple Traversal of UDP over NATs)

Computer Implications

- Processor speed
- Audio input/output
  - Analog
  - USB
  - Echo cancellation
- Video input
  - USB

(and more)

- Video (well, I let that one slip out already)
- Presence
- Rich-presence

Demonstrations

Now let's have some fun!

- An IP phone
  - Pingtel xpressa
- A computer pretending to be a phone
  - Pingtel instant xpressa
- A computer not pretending to be a phone
  - Windows Messenger
- A communications appliance
  - Xten eyeBeam
  - pulver.Communicator

More?

- A peak under the covers
- Sign up for a free SIP account
  - Free World Dial-up (FWD)

    http://www.fwd.pulver.com/
  - iptel.org

    http://www.iptel.org/
  - SIPphone.com

    http://www.sipphone.com/
- Download a SIP client (Windows & Mac)
  - Xten X-Lite

    http://www.xten.com/
- Free POTS gateway services

Questions?