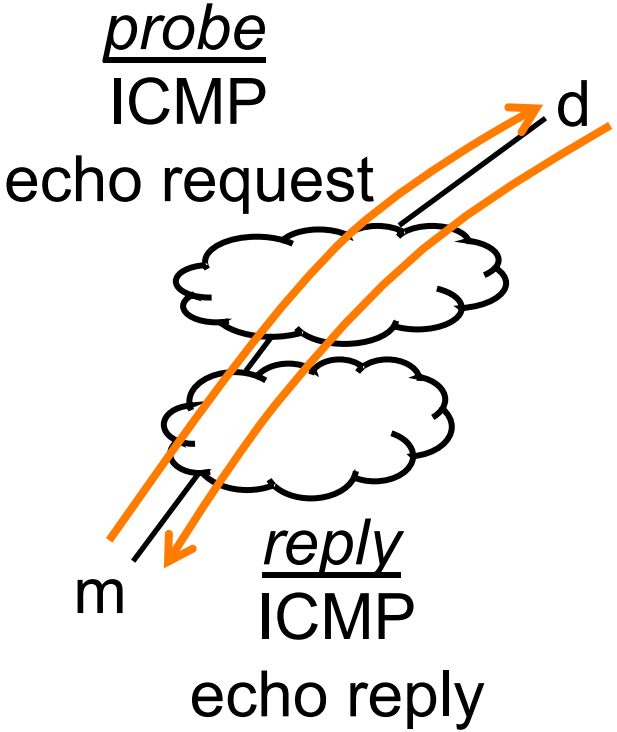
Week 1: Introduction

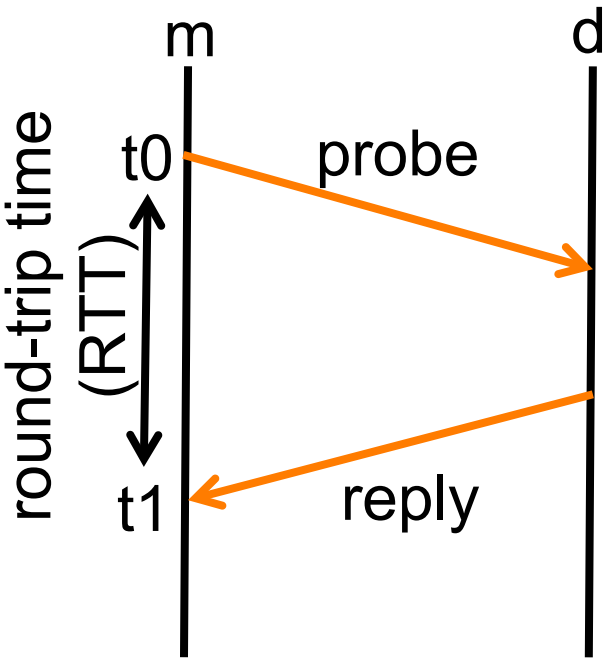
1. Course presentation
2. Background: Internet infrastructure
3. **Types of measurements**
4. Measurement platforms
5. Sound measurement practices
6. Ethical issues
7. Conclusion

Measurement techniques

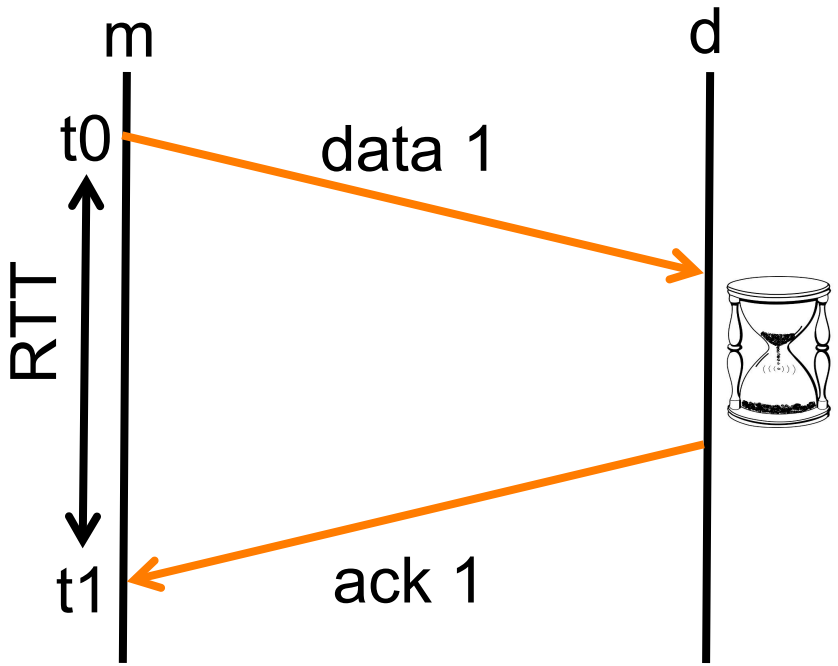
- Active
  - Based on issuing probes, analyzing response
- Passive
  - Observe existing traffic
    - ✓ E.g., IP packets, routing messages

Example active RTT measurement: ping





Example passive RTT inference: tcptrace



Comparison

Passive

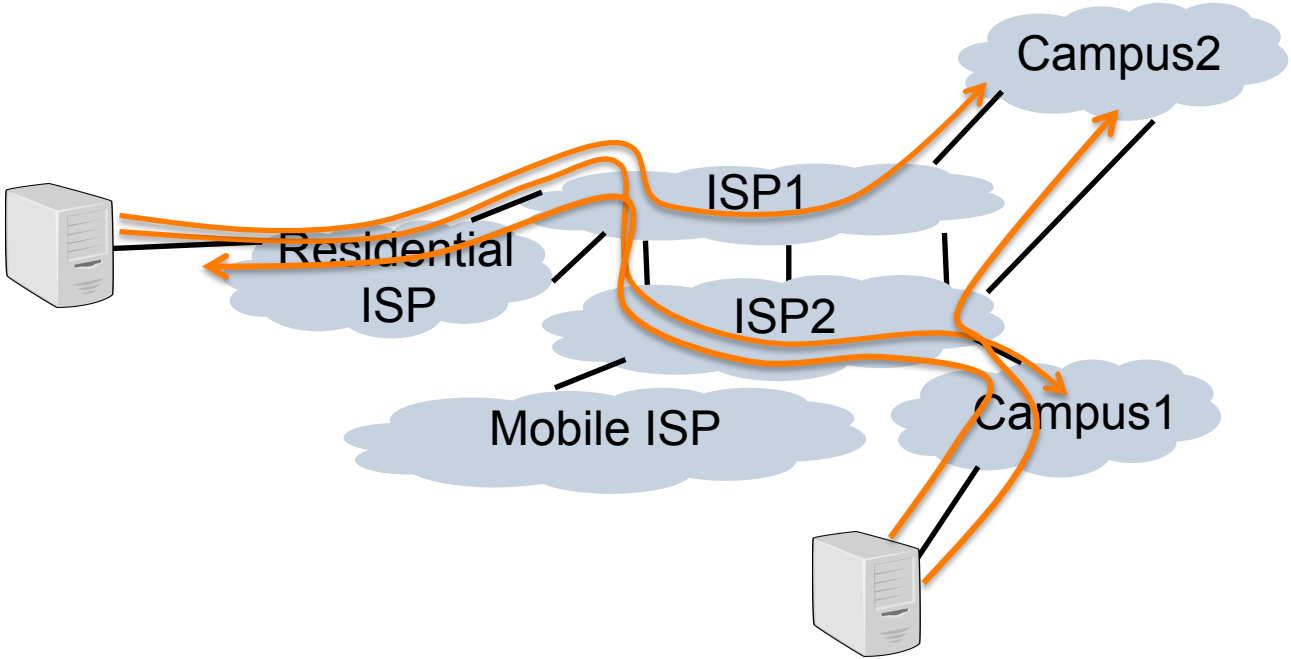
- Only way to measure traffic
- Measures user experience, behavior
- Measures protocol exchanges
- Raise privacy concerns

Active

- Measurements even when taping traffic is not possible
- Measures network, application performance
- Probing load
  - Overload network
  - May bias inferences

Measurement vantage point

- Point where measurement host connects to network
  - Observations often depend on vantage point



Possible vantage points

- End-hosts connected to the Internet
  - Active measurements of end-to-end paths
  - Passive measurements of host's traffic
- Routers/Measurement hosts in network
  - Active measurements of network paths
  - Passive measurements of traffic, protocol exchanges, configuration

Picture credits

- Slide 4: **Hourglass clipart** http://clipartfreefor.com/files/1/22904_hourglass-clipart.html
- Slide 6: **Server Linux box clip art** by OCAL, www.clker.com (public domain)