



# On Measurement and Experimental Norms

Mark Allman, ICSI

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*“Show a little faith, there’s magic in the night  
.....”*

# State of the World

- Old World: The Internet was a research playground
- Current World: The Internet is *crucial infrastructure*
  - Much non-technical tussle

# Implications

- Impacting many communities
  - users, operators, policy makers, *researchers*
- Many important implications
  - technical, practical, legal, *ethical*

# Problems

- Internet research is difficult ...
  - need hefty machine to capture data
  - logs contain sensitive information
  - deployment issues with experimental apps
  - vantage point can cloud insight
  - probe traffic may look like an attack
  - conservative management might just say “no”
  - monitoring might be illegal
  - constant vigilance required to collect good data
  - etc., etc., etc.

# Coping ...

- Who needs the Internet?
- Testbeds
  - E.g., DETER, EmuLab, the 10 noder in your lab
- Overlays
  - E.g., PlanetLab, RON
- Simulators
  - E.g., ns-[23]

# Coping ... (cont.)

- Biggest problem:
  - Our coping strategies *are not the Internet*
- So, we have to cope some more ....
  - Characterize and model the Internet to bring realism to our modeled worlds
- This brings us back to working within the bounds of the Internet

# “What Ought I To Do?”

- How do we deal with today’s Internet environment in an *ethical* way?

# Five Acts

- *How much active probing is reasonable?*
- *How to handle shared resources?*
- How to treat shared data?
- *How to protect users?*
- How to protect institutional or commercial privacy?



# Active Probing

- Marcel Dischinger, Andreas Haeberlen, Krishna P. Gummadi, Stefan Saroiu.  
*Characterizing Residential Broadband Networks*, ACM/USENIX Internet Measurement Conference, October 2007.
- How much is too much?
- What constitutes an attack?

# Shared Resources

- A. Banerjee, M. Faloutsos, and L. Bhuyan. *Is Someone Tracking P2P Users?* In IFIP Networking, 2007.

# Shared Data

- Ruoming Pang, Mark Allman, Vern Paxson, Jason Lee. *The Devil and Packet Trace Anonymization*. ACM Computer Communication Review, 36(1), January 2006.
- S. Coull, C. Wright, F. Monrose, M. Collins, and M. Reiter. *Playing Devil's Advocate: Inferring Sensitive Information from Anonymized Network Traces*. In Proceedings of the Network and Distributed System Security (NDSS) Symposium, Feb. 2007.
- Mark Allman, Vern Paxson. *Issues and Etiquette Concerning Use of Shared Measurement Data*. ACM SIGCOMM/USENIX Internet Measurement Conference, October 2007.

# User Privacy

- If we agree on anything in this space, it is generally that we must respect *user privacy*
- In my conversations, this is uniformly believed
- But, what does it mean?

# User Privacy (cont.)

- Frederic Giroire, Jaideep Chandrashekar, Gianluca Iannaccone, Dina Papagiannaki, Eve Schooler, Nina Taft. *The Cubicle vs. The Coffee Shop: Behavioral Modes in Enterprise End-Users*, Passive and Active Measurement Conference, April 2008. To appear.

# Institutional Privacy

- Neil Spring, Ratul Mahajan, and David Wetherall. *Measuring ISP Topologies with Rocketfuel*. In ACM SIGCOMM, August 2002.

# In Addition ...

- What is the role of an IRB?
- What is the role of a PC?
  - Mark Allman. *What Ought A Program Committee To Do?* USENIX Workshop on Organizing Workshops, Conferences, and Symposia for Computer Systems (WOWCS), April 2008. To appear. <http://www.icir.org/mallman/papers/pc-ethics-wowcs08.pdf>
- Do we need a set of community norms that we can reference and use for guidance?



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# Questions? Comments?

Mark Allman

*mallman@icir.org*

*<http://www.icir.org/mallman/>*