

Tips from a Networking Insider

Stefan Savage

University of California, San Diego

An **Insider's** guide to doing research for SIGCOMM

1. Pick a good title
2. Do some research
3. Don't piss anyone off... too much

Selecting a good title

Top terms appearing in titles of SIGCOMM papers:

1. Internet
2. Networks
3. Routing
4. Scalable
5. Multicast

Fairly invariant, except “Internet” enters top three in 1996 and “fair” disappears

How to do research

- Elements of research
 - Write a conclusion
 - Align yourself with a doctrine
 - The rest... is style
- Example research question:

“Is RED important for helping property x and if so, how much?”

Mike Measuremuch

- Research process
 - Gets accounts on 10,000 machines and send data between them
 - Design tool to detect whether RED is on or off on intervening links
 - See if RED helps property x across six months of measurements
- Conclusion: RED helps property x 79% of the time, with a standard deviation of 50

Peter Pessimistic

- Research process
 - Anything you measure is biased by bad methodology
 - If you do measure something it can't be generalized
 - By the time you do generalize it, the Internet has completely changed
- Conclusion: its impossible to know

Don Dogmatic

- Research process
 - RED is good, therefore it helps x
 - If RED doesn't help x then
 - x doesn't matter
 - x is bad
 - you just don't understand
 - There are good analogies to unrelated disciplines (e.g. power grids)
- Conclusion: RED is good

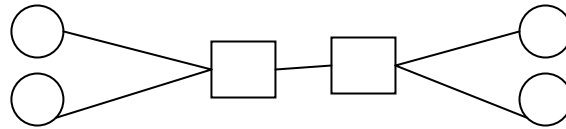
Theo Thinksalot

- Research process
 - Learn “Judge Ito” calculus
 - Learn what Max Plus Linear means
 - Validate that your work can’t be evaluated

- Conclusion: RED is
$$\frac{\sum_{\Pi^{\beta}} \left\langle \sqrt{\iint_x \begin{array}{ccc} \mathfrak{R} & \nu & \theta \\ \varsigma & \rho & \alpha \\ \eta & \pi & \kappa \end{array}} \right\rangle}{\Omega}$$

Sue Simulator

- Research process
 - Pick a version of ns
 - Construct a realistic topology



- Measure property x with every combination of parameters
- Conclusion: RED works well for some parameters, but not for others

Abe Abstraction

- Research process
 - Worst case RED drops all packets
 - Best case RED doesn't drop any packets
 - There is a utility function p , the represents the range between
- Conclusion: RED impacts property x proportional to the amount of traffic times p

Oliver Outrageous

- Research process
 - Drink beer
 - Complain a lot
 - Call yourself an insider
- Conclusion: Whatever...