scamper

Matthew Luckie
mjl@wand.net.nz

http://www.wand.net.nz/scamper/
What is scamper?

- Packet prober designed for large-scale active measurement of the Internet
  - Probes at supplied packets-per-second rate
- TraceRoute
  - tcp, udp, icmp, ipv4, ipv6, paris, pmtud, double-tree, load-balancer
- Alias Resolution
  - mercator, ally, radargun
- Ping
- Sting

http://www.wand.net.nz/scamper/
Approach

• Original goal to replace use of /sbin/traceroute
• Flexible
  – Standalone measurement utility
    • does not require ruby interpreter or perl or any libraries.
  – Control socket: dynamically feed scamper work to do on demand
  – CLI: one-shot measurements
• Focus just on implementing a good prober
• Portable
  – *BSD, Linux, MacOS X, Solaris, Windows

http://www.wand.net.nz/scamper/
Data comes back in uuencoded binary warts format.

i.e. records a lot of response detail

Client can send commands whenever scamper says “MORE”.

http://www.wand.net.nz/scamper/
scamper command line

• scamper –c ‘trace –P icmp-paris’
  <filename>

• scamper –c ‘trace –P icmp-paris’ –i
  <ip1> <ip2> … <ipN>
Approach

- Good science
  - Uses best timestamps available
    - Datalink timestamps (BPF)
    - Socket timestamps
  - Binary file format records details of responses and meta-data of measurement
Example Use Cases

• CAIDA IPv6 AS core poster (Brad)
• Dual-stack path analysis (Kenjiro Cho)
• IMC papers:
  – 2005: Inferring and Debugging Path MTU Discovery Failures
  – 2008: Traceroute Probe Method and Forward IP Path Inference

http://www.wand.net.nz/scamper/
Why implement your measurement techniques in scamper?

• Portability taken care of, e.g.
  – Datalink for putting crafted frames onto a link
  – Route socket for finding appropriate interface
  – Byte ordering requirements for raw sockets, etc.
  – Every operating system does things slightly differently

• Event driven; don’t have to use threads to get parallelism

• Lends itself to integration with Ark
How to get?

• http://www.wand.net.nz/scamper/
  – Source code GPLv2
• FreeBSD, NetBSD, Debian packages.