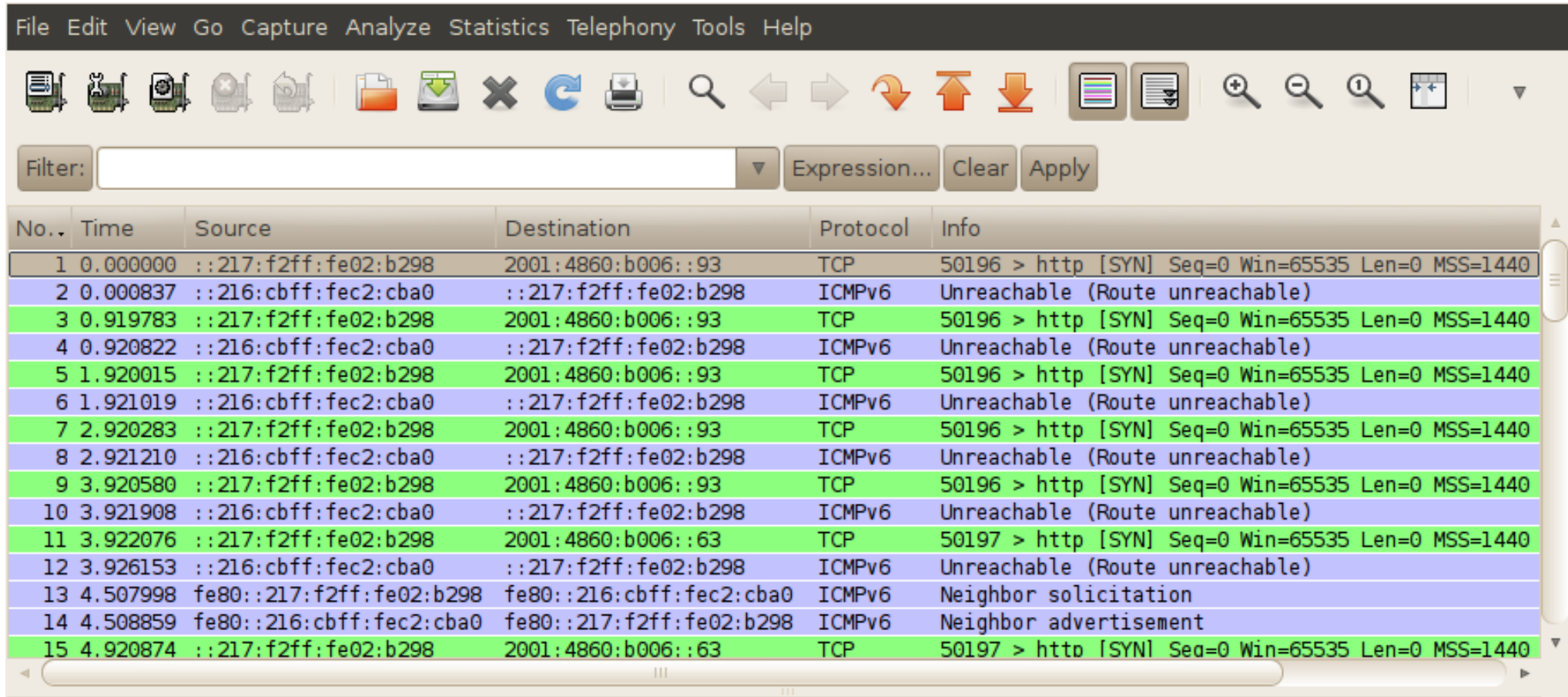# World IPv6 day

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What's the problem?

- Many OS stacks try IPv6 first, then fall back to IPv4
- Fast local failures are normal and transparent
- The problem is slow failures and timeouts
  - Windows: 20 seconds
  - Mac: 4 seconds
  - Linux: either instant or 3 minutes
- One timeout per AAAA record
  - www.google.com used to have 6 AAAAs
  - You do the numbers

An example

User with broken IPv6 in the Google over IPv6 program

What's wrong with this picture?

- Implementation bugs
  1. Home gateway sending out RA in reserved range (::/64)
  2. Host autoconfiguring an address in a reserved range
  3. Home gateway sending RAs even without connectivity
  4. Host attempting connections with no global address
  5. Host ignoring ICMPv6 unreachables
- Misconfiguration
  - Put home gateway in 6to4 mode behind a NAT
- Impact
  - All Google sites take 24 seconds to load

What does this mean?

- Problem: home network is broken
- Perception: "Google is broken"
  - All other dual-stack sites are broken as well
    - But user didn't notice
  - User doesn't realize there is a problem
    - Never calls ISP
    - Suffers in silence, goes to another website, ...
- Our data shows that ~0.05% of users has this problem
  - *All the time, every time they connect*
- This is the #1 reason content providers cannot enable IPv6

"World IPv6 day"

Basic idea

- Major websites enable IPv6 together for one day
- User perceives a problem with Internet connection
  - Calls ISP
  - Disables IPv6
- Benefits of coordination
  - Content providers share the impact
  - OS vendors have time to work around problems
  - Network operators can be prepared
  - Users can be warned in advance
  - Marketing and media can be involved

Current thinking

- Note: work in progress!
  - Nothing decided yet
  - Nobody has committed to anything
- ISOC-organized
- Possible date: 6/6/2011
  - Should be well past IANA runout
- Major content providers involved in discussion
  - Google, Facebook, Yahoo!
  - Akamai, Limelight
  - Netflix, AOL
  - ... the more the merrier

How can you help?

- Content providers
  - Deploy IPv6 and participate
  - Ask your CDN vendor to let you participate
- ISPs
  - Provide separate DNS servers for IPv6 users
  - Train user support
  - Replace broken user CPEs?
  - Deploy IPv6, including IPv6-capable CPEs

How can you help?

- OS vendors
  - Fix bugs
  - Depref 6to4
  - Probe for working IPv6, disable if it's not working
    - Need to patch old systems as well!
- Home router vendors
  - Provide robust IPv6 support
  - Turn off 6to4!

Questions?

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