Zhiwei Yan <yanzhiwei@cnnic.cn>
Warren Kumari <warren@kumari.net>
Wes Hardaker <hardaker@tislabs.com>
The World of DNS Requests Today

• A single request to start
• Followed by another
• And another
• And ...
Examples

• Query A for www.example.com
  - Followed by css.example.com
  - And then images.example.com
  - And api.example.com
  - ...

• Query MX for example.com
  - Followed by A for mail1.example.com
  - Followed by A for mail2.example.com
  - Followed by TLSA _25._tcp.mail1.example.com
  - Followed by TLSA _25._tcp.mail2.example.com
Examples 2

• Query SRV for _imaps._tcp.example.com
  – Followed by A for imap1.example.com
  – And A for imap2.example.com
A Pictorial View from 2010
A Close Up

doubleclick.net
ns3.doubleclick.net
ns2.doubleclick.net
ns1.doubleclick.net

ads.cnn.com
www.cnn.com
svcs.cnn.com
dnms02 Turner.com
dnms01 Turner.com
dnms07 Turner.com
What this proposal is and is not

- **Is**
  - A Bundling ability for authoritative servers
  - Zone administrator configured
    - Client still asks one question
- **Is not**
  - A way to ask multiple questions
    - (The client doesn't know the questions yet)
  - Competition with dnsop-xxx-...
    - Where xxx = ask multiple questions
How It Works

- Client sends an **EXTRA** flag in EDNS0
- Authorative DNS server
  - Gets instructions via an EXTRA RR type
  - Sends ANSWER
  - Also **fills ADDITIONAL** section
  - Maybe truncates to fit transport
- Clients may query for EXTRA if desired
  - Generally not needed
  - Not prohibited though
The EXTRA Record

• The EXTRA record specifies:
  – Given a name and type...
  – ... what else should be returned

• Current dnsop-list agreement: (?)
  www IN EXTRA   A 10 A images
  www IN EXTRA   A 10 A css
  www IN EXTRA   A 20 CNAME api → api.magic
  www IN EXTRA   A 30 NS magic
  www IN EXTRA   A 30 DS magic
Restrictions

• MUST be authoritative
  - Can't answer for other portions of the tree
  - (Prevents regional differences based on query src)
• MUST be DNSSEC signed
  - Protects against poisoning
  - Most existing resolvers ignore ADDITIONAL today
    • Except for glue...
    • ... Which they only use to bootstrap
Questions?
Next Steps

• DNSOP Adoption?
  – Yay?
  – Nay?