# IPv6 for Registrars Webinar
# December 2013
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# Agenda

- IPv6 requirements in the new RAA
- Glue
  - What is glue?
  - Registering glue
  - RFC 5952
- Whois
  - Transit
  - Rate limiting

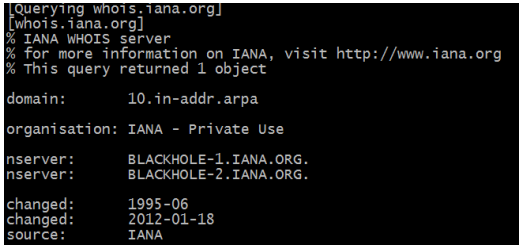
# 2013 RAA IPv6 Requirements (1)


- “To the extent that Registrar offers registrants the ability to register nameserver addresses, Registrar must allow both IPv4 addresses and IPv6 addresses to be specified.”

# 2013 RAA IPv6 Requirements (2)

- “and IPv6 addresses format should conform to RFC 5952 (or its successor)”
- This RFC standardizes the way IPv6 addresses are represented

# 2013 RAA IPv6 Requirements (3)




- "At its expense, Registrar shall provide an interactive web page and, with respect to any gTLD operating a "thin" registry, a port 43 Whois service (each accessible via both IPv4 and IPv6) providing free public query-based access to up-to-date (i.e., updated at least daily) data concerning all active Registered Names sponsored by Registrar in any gTLD"



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# DNS Glue

These prevent circular references. When a domain name is served by nameservers within its own domain the parent needs to provide the nameserver's IP address as well as its name in response to queries




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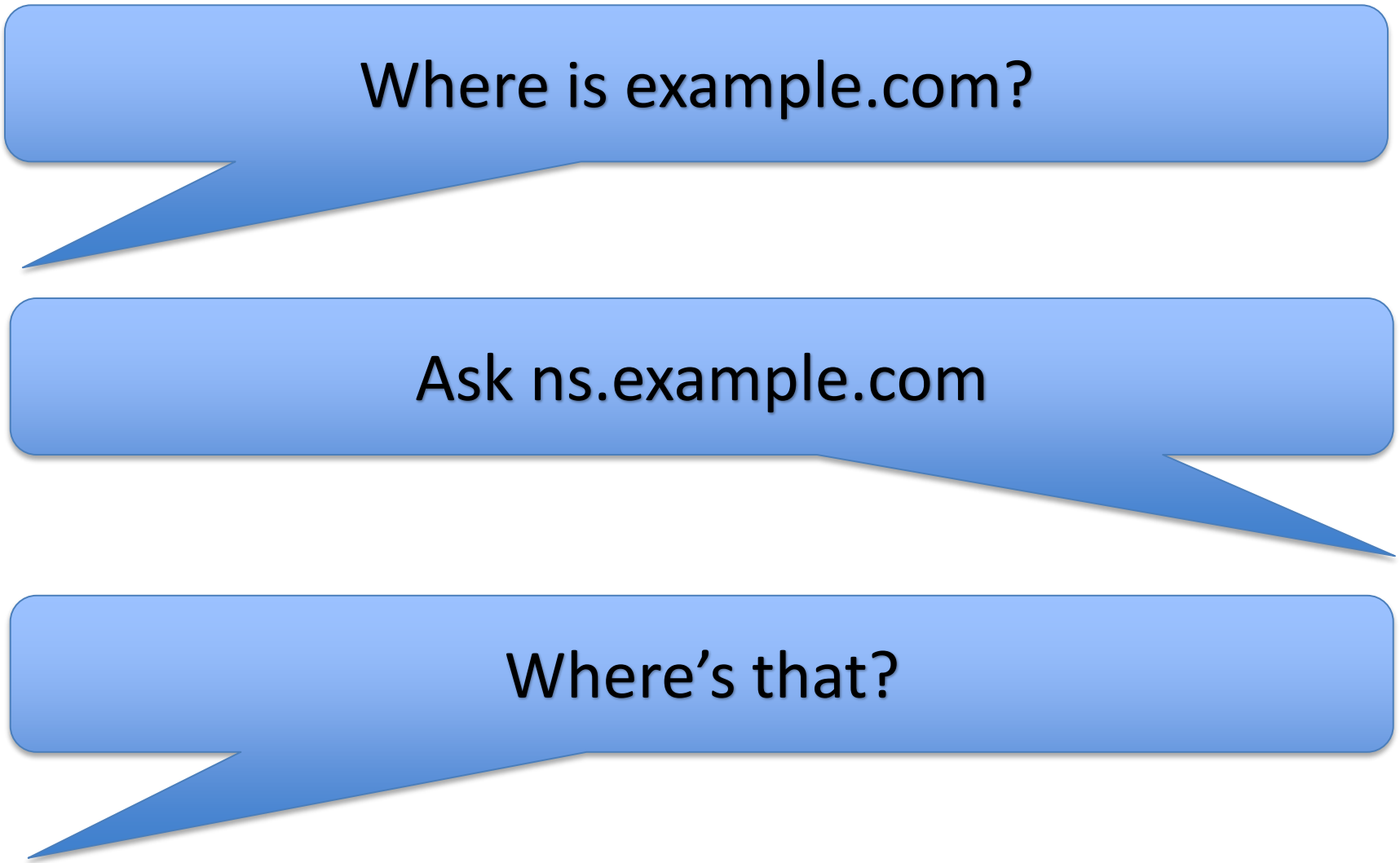
# Broken example



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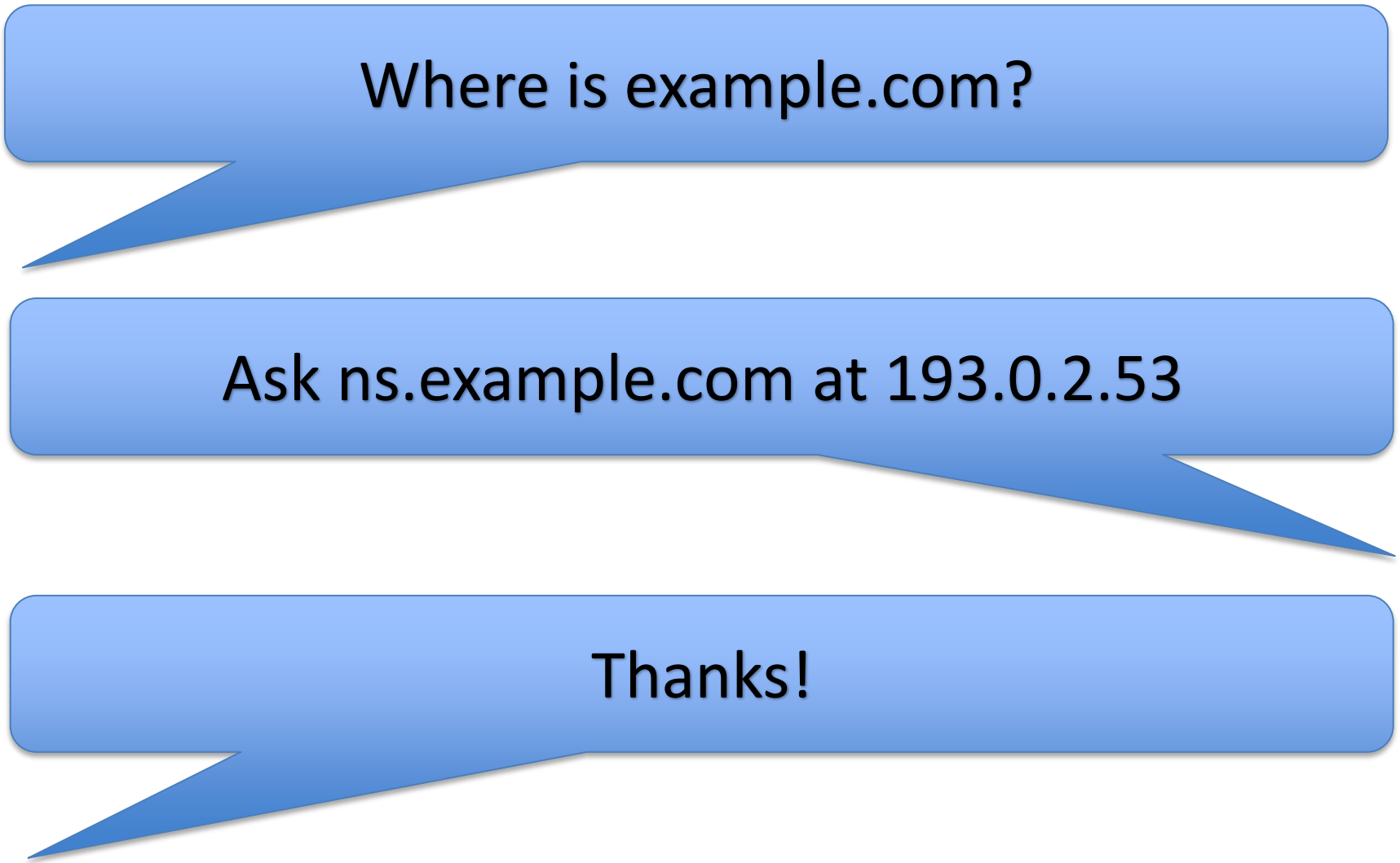
# Working example



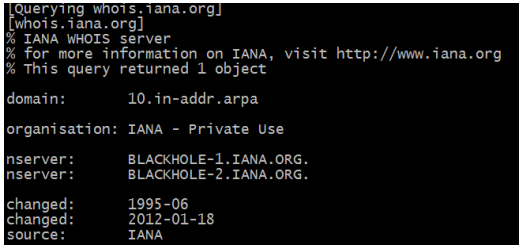
# Tools to convert addresses to RFC 5952 format

- ipv6calc (a small utility)
- inet_ntop(3) (a library)
- php code
- python code (a library)

# Glue: To Do List


1. Allow IPv6 addresses to be added as glue alongside IPv4 addresses
2. Reformat addresses in-line with RFC 5952 requirements
3. Pass to the registry as normal

# Whois




+ IPv6 transit
+ Rate limiting



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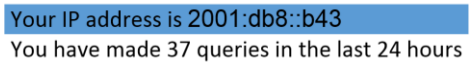
# IPv6 transit

+ Get native transit if you can
+ Do not rely on autoconfigured 6to4 addresses for production services
+ Manually configured tunnels work but are generally add latency over native connections

# Rate limiting (1)




- ICANN's experience with whois.iana.org is that it is not necessary
- RIRs have been running whois over IPv6 for years and tend to limit (often for legal reasons) at a /64 granularity, though very few addresses are ever blocked



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# Rate limiting (2)

+ TEREDO and 6to4 are a tiny proportion of whois traffic and do not cause significant issues

# Whois: To Do List


1. Buy native IPv6 transit (or at least manually configure a tunnel)
2. Configure your port 43 whois server and web interface to listen on IPv6
3. Rate limit at a /64 granularity at first if you need to apply rate limiting



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# Thank You & Questions?