INTERNET SYSTEMS CONSORTIUM

Deploying DNSSEC. Pulling yourself up by your bootstraps

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DNSSEC status

- Standard is complete and usable
  - Minor nits with regards to some privacy issues in some contexts (nsec3, online signing)
- There are at least 2 implementations of servers (BIND and NSD)
- There is at least 1 implementation of a DNSSEC aware resolver (BIND 9.3.2 and later)

Bootstrapping

- DNSSEC follows a hierarchical model for signatures
  - Sign the root zone
  - Get the root zone to delegation-sign TLDs
  - Get TLDs to delegation-sign SLDs
  - …..

Unsigned root and TLDs

- Today the root zone remains unsigned
  - Likely this way for some time
- Very few TLDs have signed their zones and offer delegation signatures
  - .se, .ru, .org

But I want my zone signed

- DNSSEC provides for local implementations to be able to insert local trust anchors, entry points into the secure system
  - E.g. Trust-anchors clause in BIND
- Problem: If you have too many it becomes a nightmare to maintain, so it doesn't get used

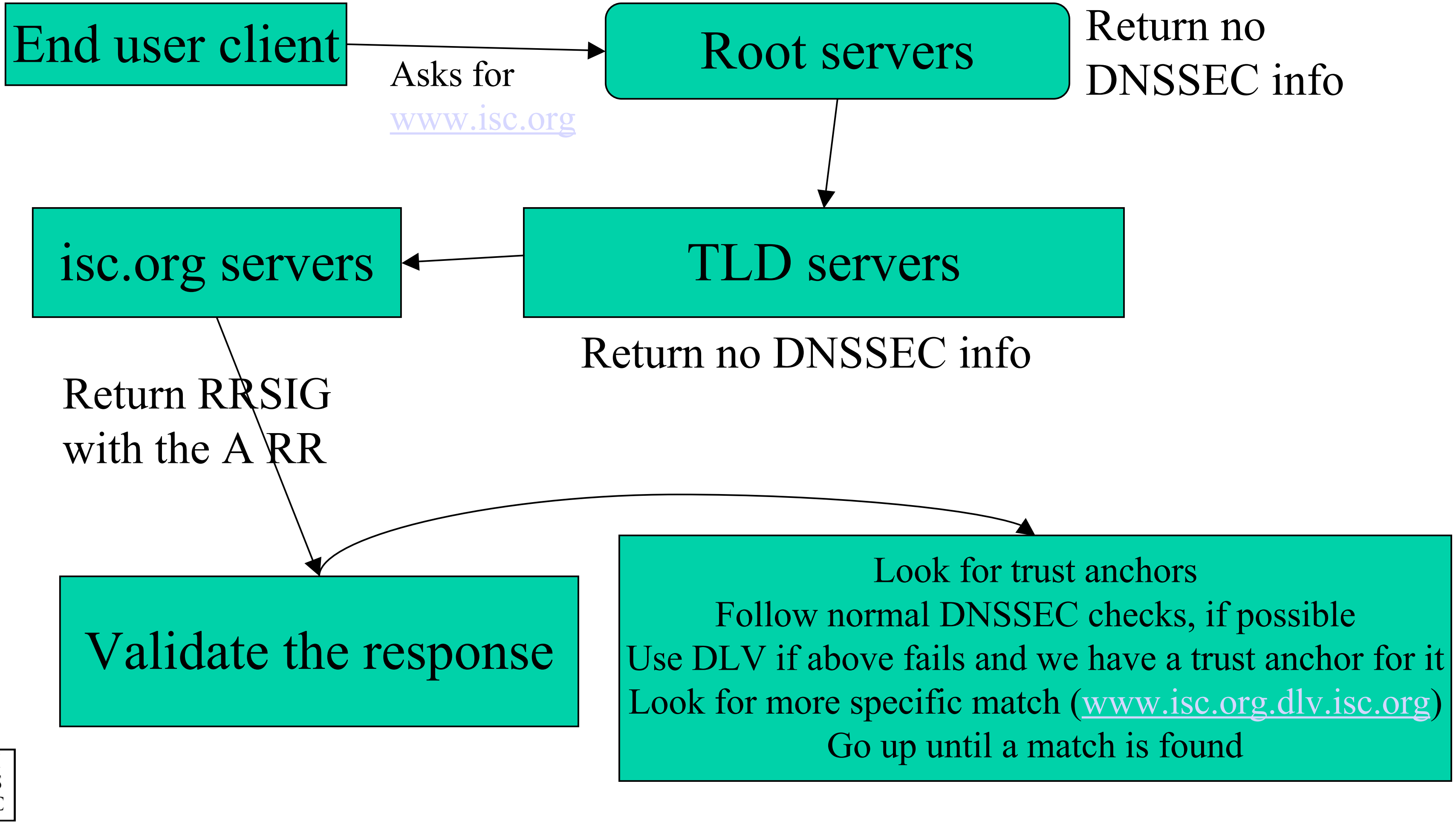
DLV

- Enter DLV, Domain Lookaside Validation
  - Is an implementation feature, not a change to the protocol. A matter of local policy.
  - It enables access to a remote, signed, repository of trust anchors, via the DNS
- Implemented in BIND's resolver so far. More to follow?

DLV lookup

- A DLV enabled resolver will try to find a secure entry point using regular DNSSEC processes and **IF IT FAILS**, and has DLV configured, will issue a search on the specified DLV tree

DLV lookup



End user client

Asks for www.isc.org

Root servers

Return no DNSSEC info

TLD servers

Return no DNSSEC info

isc.org servers

Return RRSIG with the A RR

Validate the response

Look for trust anchors
Follow normal DNSSEC checks, if possible
Use DLV if above fails and we have a trust anchor for it
Look for more specific match (www.isc.org.dlv.isc.org)
Go up until a match is found

Enabling DLV

- On the resolver (thus far BIND)
  - Add to named.conf
    - In the options section:

      ```
      // DNSSEC configuration
       dnssec-enable yes;
       dnssec-lookaside . trust-anchor dlv.isc.org.;
      ```

    - By itself

      ```
      trusted-keys {
      dlv.isc.org. 257 3 5
          "AQPap3+2+itqZpuujLA/j/eIEyls9HGo9W8rm1uVpW0zZX4viyFQyGL91
          YkGUA2uTQ1ZHWbJ36KYlJpt8ZZ+tuIismJw9/AUnNzlPgwCfq5C2MOG
          Vh33nF60k67ppiapMYsOaDFbAQf5Vcc3L+BwfJvkXsZK73nD3gBEcdcm
          uJejeQ==";
      };
      ```

- Get the Key from ISC’s web (http://www.isc.org/ops/dlv)

DLV registries

- ISC is operating a DLV registry free of charge for anyone who wants to secure their DNS.
- Likely some closed organisations will use their own (e.g. .mil)
- Have a look and use it!

Questions?