9 - DNS & Deploy

React education, 2024.

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Overview

- DNS
- Deploy

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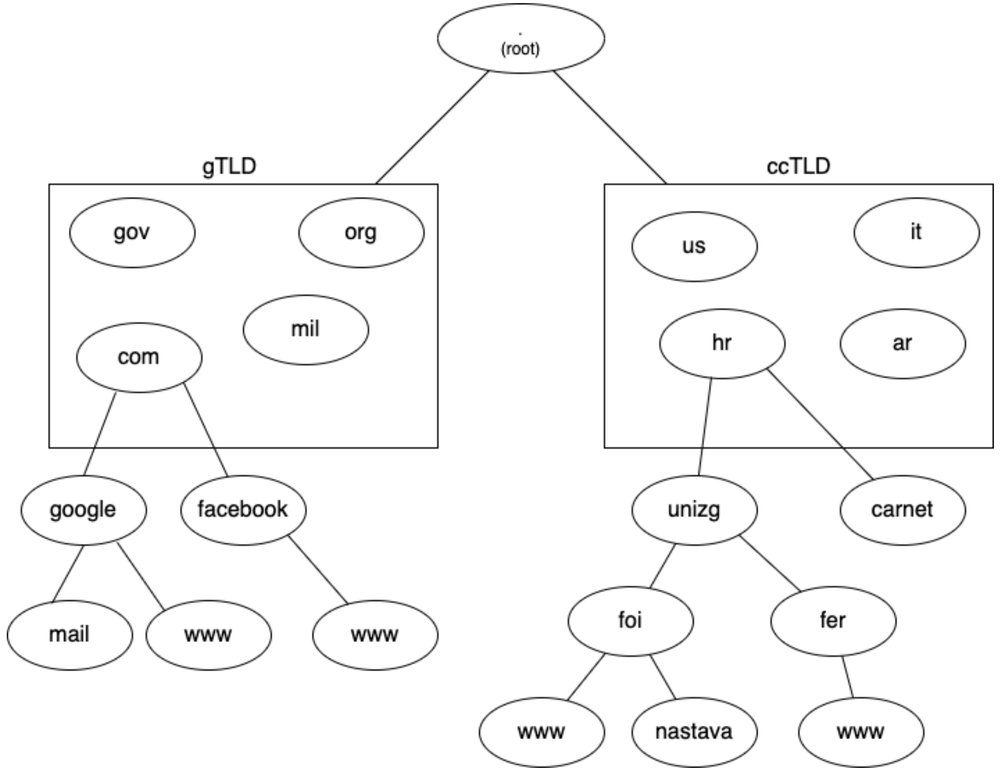
DNS

DNS

- The Domain Name System (DNS) is the phonebook of the Internet.
- Humans access information online through domain names, like nytimes.com or espn.com. Web browsers interact through Internet Protocol (IP) addresses. DNS translates domain names to IP address so browsers can load Internet resources.
- Translates human readable domain names (for example, www.amazon.com) to machine readable IP addresses (for example, 192.0.2.44).

Domain namespaces

- FQDN
  - ime.poddomena.domena
  - www.foi.unizg.hr => 161.53.120.251
- Top of the hierarchy is called root NS
- Below the root are top level domains (TLD)
  - Generic TLD (gTLD)
  - Country code TLD (ccTLD)



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Root name servers

- Labeled with “.”
- Contains all TLDs (list of domain names and addresses)
  - 730 gTLD
  - 301 ccTLD
- There are 13 root servers in the world operated by 12 independent root server operators
- 1091 instances

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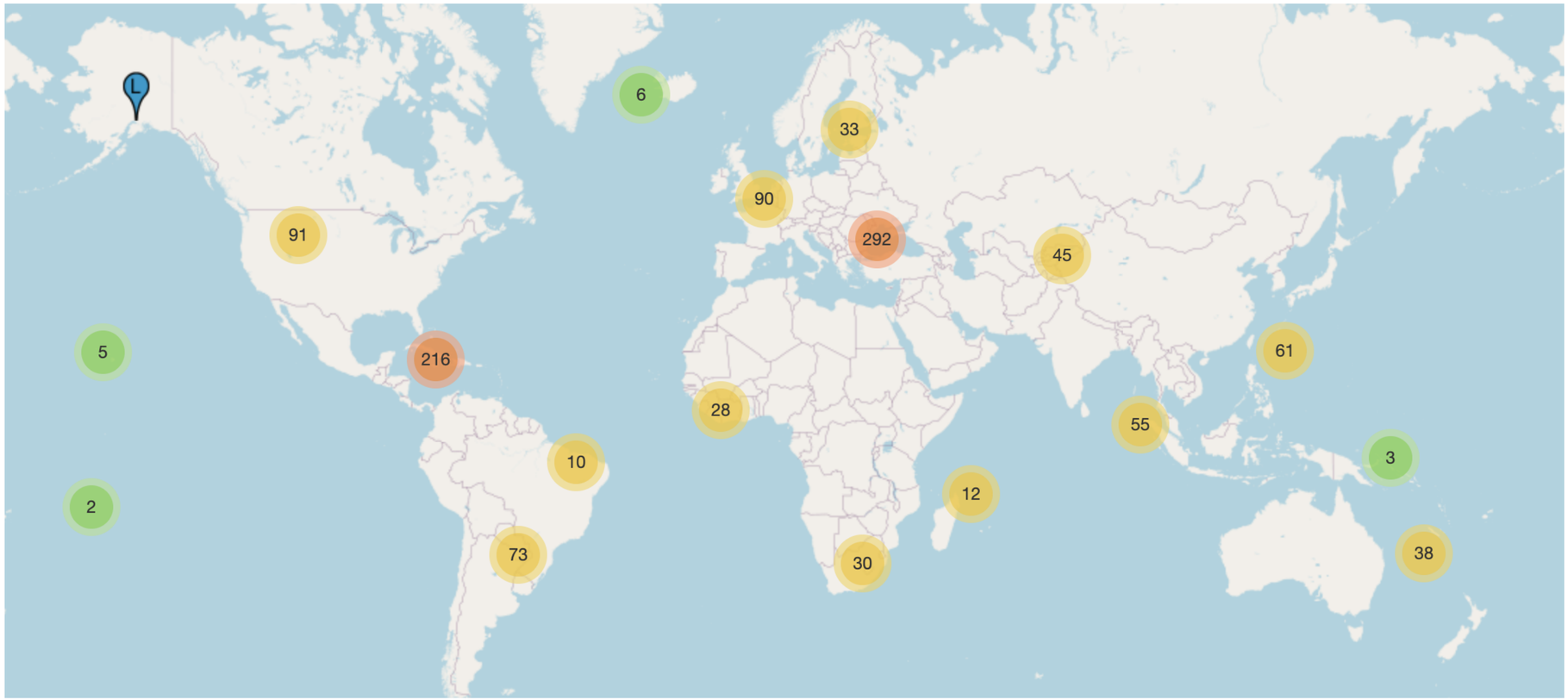
Root name servers



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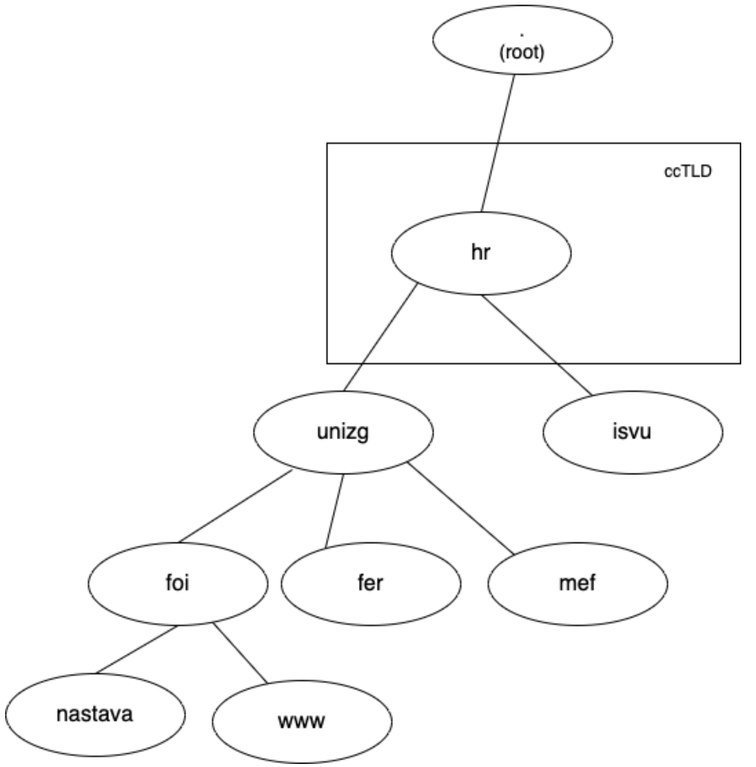
DNS organisation

- Organized like a hierarchical distributed database
- Each DNS server is responsible for a subset of the global domain namespace, called a zone, and for that subset it actually contains the associated data.
- One zone can contain one or more domains (branch of a tree)
- Zone authority - DNS server that contains a complete and correct list of data for that zone

Example of DNS organization

- DNS server for .hr domain is located at SRCE
- That server contains records of domain names and IP addresses of DNS servers responsible for subdomains of .hr domain



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DNS records

- DNS records (aka zone files) are instructions that live in authoritative DNS servers and provide information about a domain including what IP address is associated with that domain and how to handle requests for that domain.
- Resource record
- Contains:
  - Name (FQDN of the node in the tree)
  - Type (A, CNAME, NS…)
  - TTL

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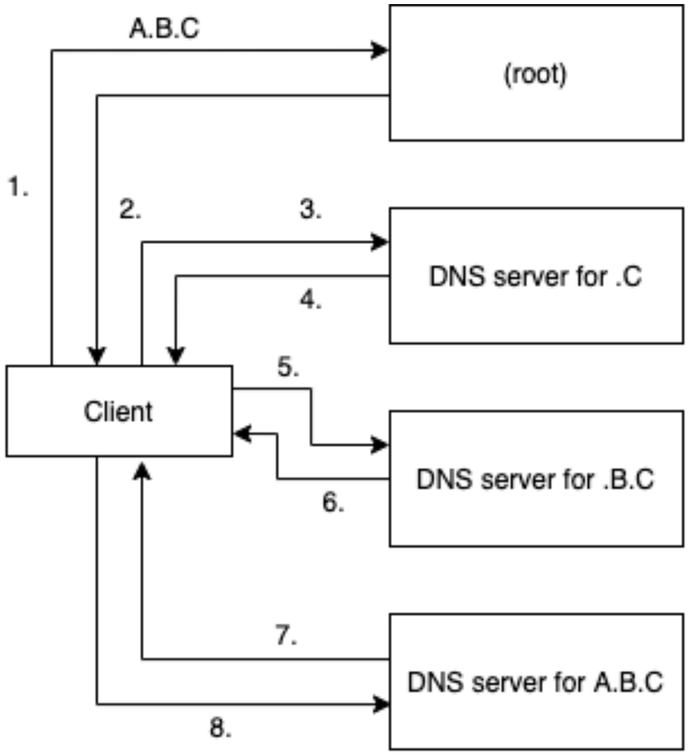
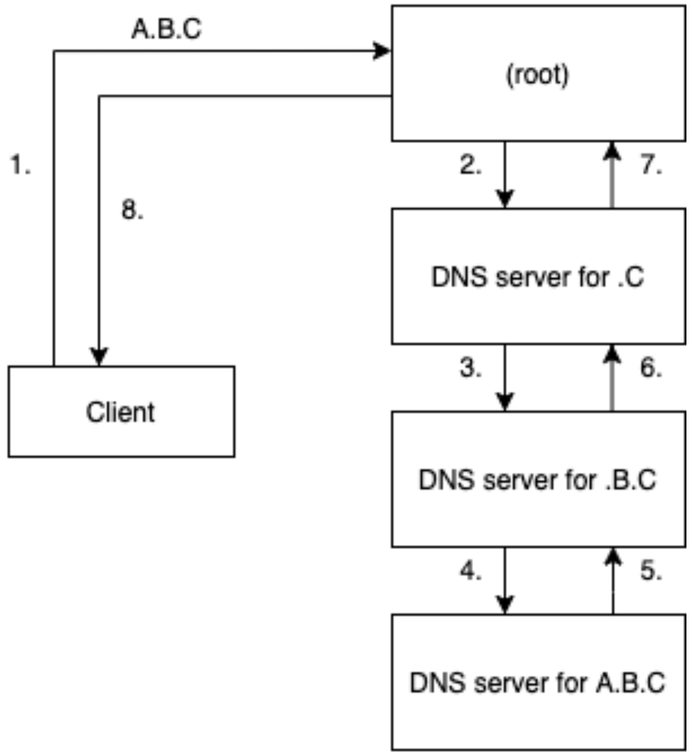
Name resolution

- The IP address of a certain domain is stored in the DNS server database responsible for that zone
- All other DNS server act as intermediaries
- Two ways of resolving a name: *Iterative* and *Recursive*

Name resolution

- Assumption is that there are not records stored in cache from previous requests





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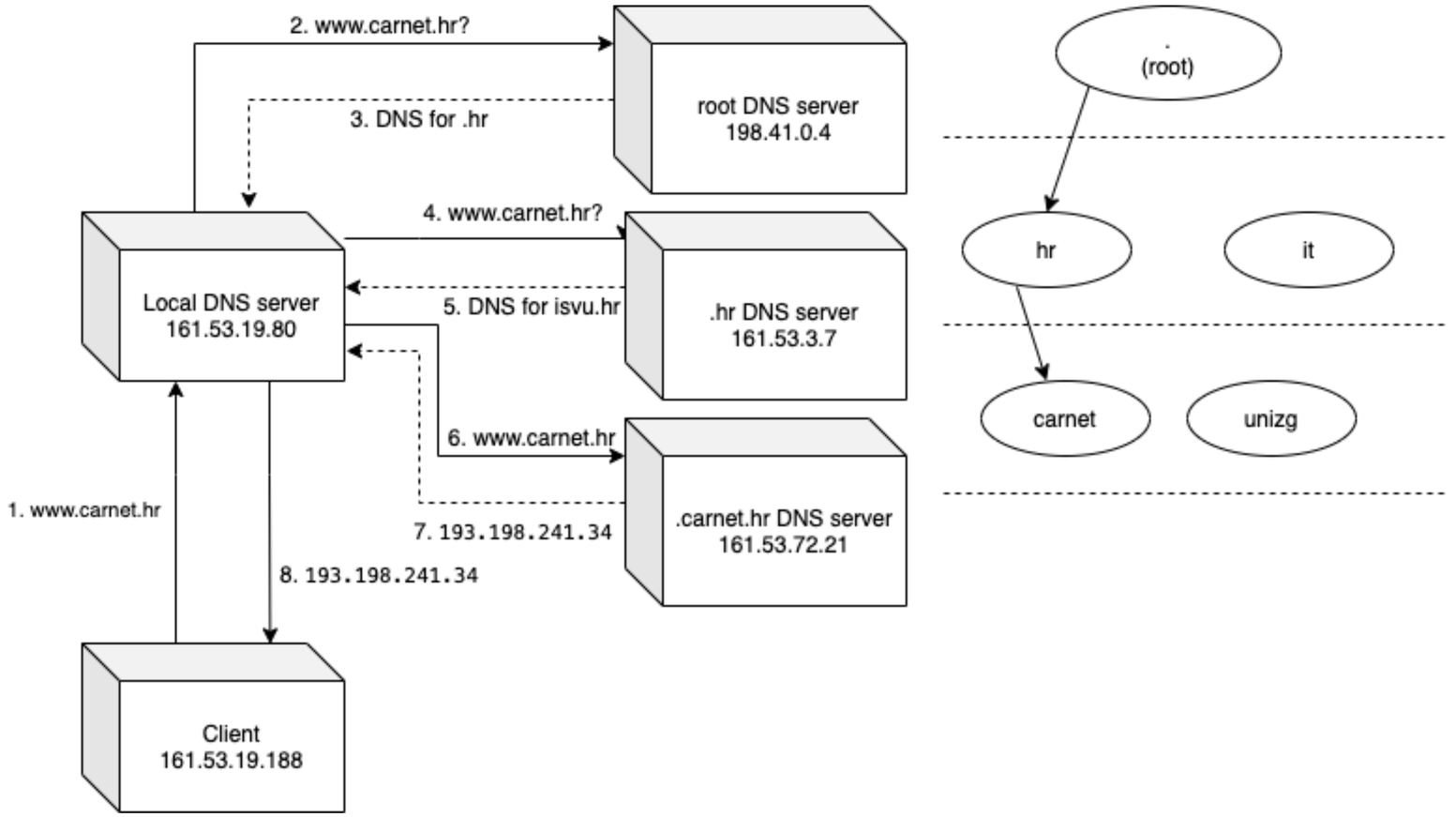
Deeper look



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Deploy

Deploy

- There are several different ways of hosting React applications:
  - Deploying on your own server (Nginx, Apache)
  - Using existing platforms (Vercel, Netlify, GitHub pages)
  - Cloud Storage Services with Static Site Hosting (AWS S3)
  - Containerization (using Docker and deploying on Kubernetes, DigitalOcean, AWS ECS, etc.)
  - Firebase hosting