DNS

History

- Hosts file
  - flat namespace
 - possible duplicates
  - unwieldy

DNS What is it?

- ICANN - Internet Corporation for Assigned Names and Numbers
- IANA - Internet Assigned Numbers Authority
  - department of ICANN?
  - manages the root zone (top of hierarchy)
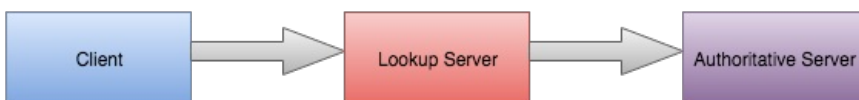 - manages global pool of IP addresses

DNS What is it?

- Do we need it to use the internet?
- Registrar
  - puts your domain into the global registry
  - Each TLD has only one authoritative registry
  - Verisign
  - Tld registry db
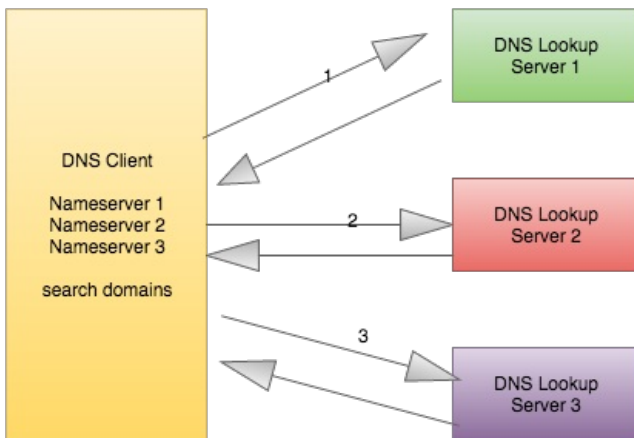
The Hierarchy
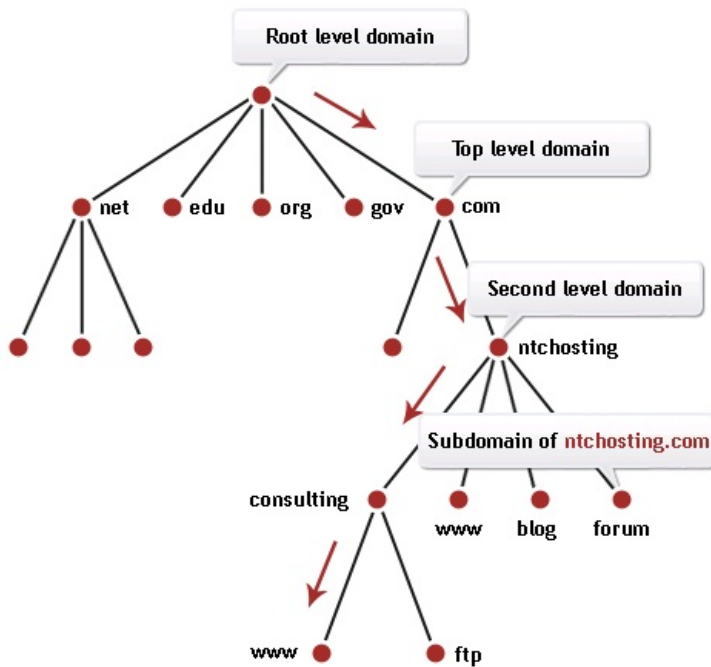
A simple view

More

- OSI model? Ports? UDP
- Zone transfers always done with TCP
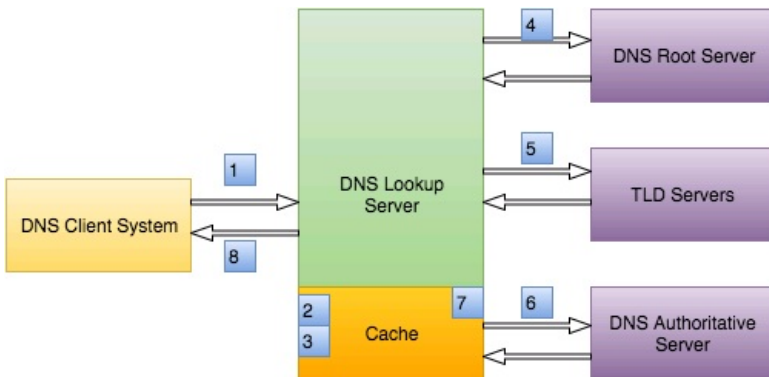- UDP is almost always use to query first, but may switch to TCP if response is too large.

DNS Client View

- Youtube video
- Timeouts
- Search Domain

DNS Client View


Lookup Server View

Lookup Server Steps

- 1. Client makes request to lookup server
- 2. Lookup server checks to see if request is saved in cache
- 3. If it is, is it still valid?
- 4. Query root server to find address of tld nameserver
- 5. Query TLD server to find address of domain nameserver
- 6. Query authoritative domain server to find address of host
- 7. Store results in cache
- 8. Return results to client

Lookup server Misc

- TTL
  - Amt of time (in seconds) the record can be cached by any resolver
  - low value: more load on DNS server
  - too hi: stale cache entries
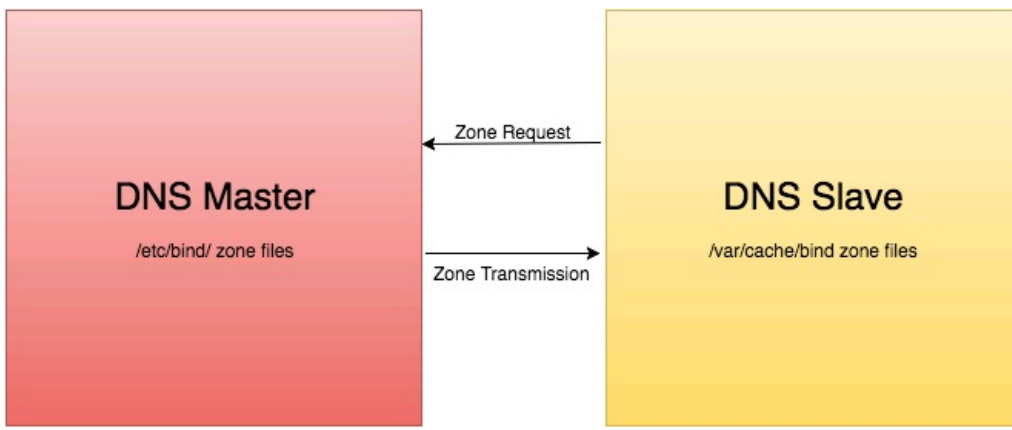- Recursive lookups
- Security?

Authoritative Server View
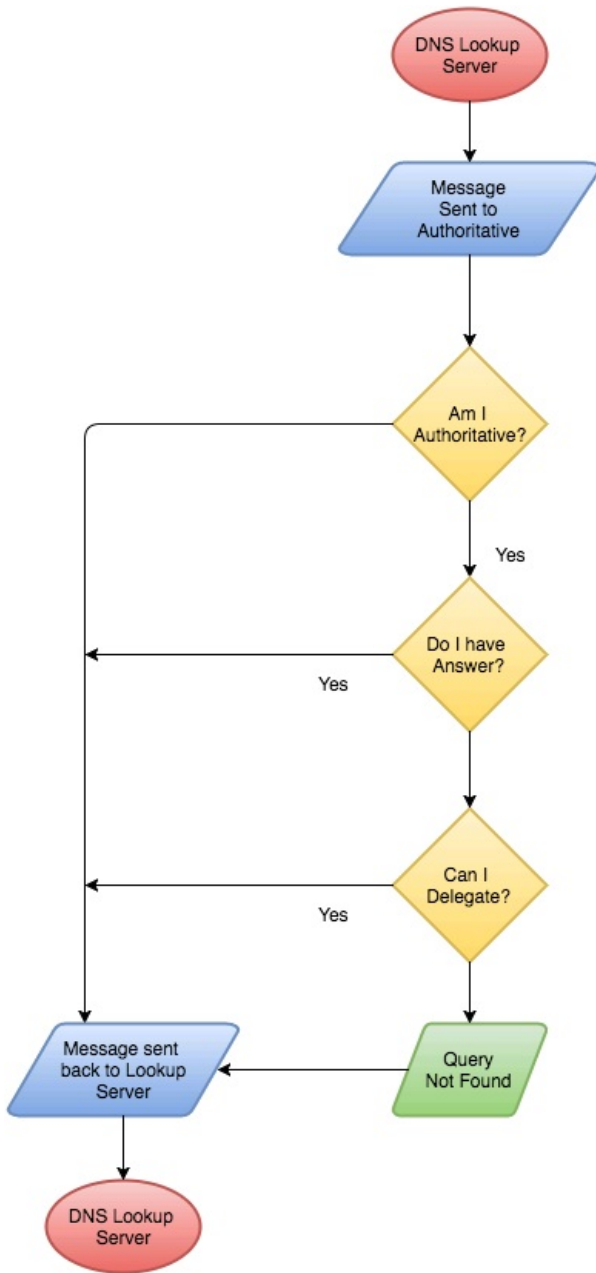
Subdomains and Delegation

- When the authoritative name server for a domain receives a request for a subdomain's records and responds with NS records for other name servers, that is DNS delegation.

- [visual](#)

Master/Slave Authoritative Server Views

DNS Master
/etc/bind/ zone files

Zone Request

Zone Transmission

DNS Slave
/var/cache/bind zone files

Finally

- Notify
- Serial Numbers