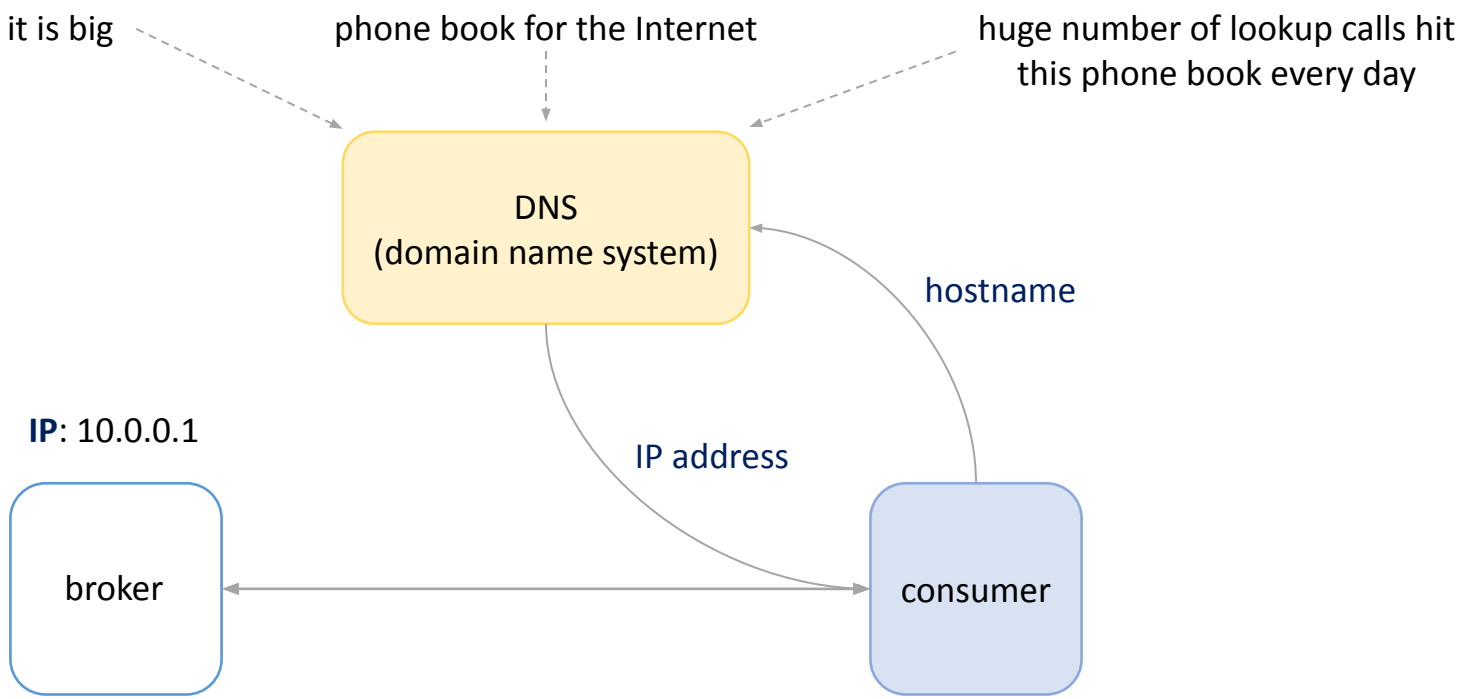
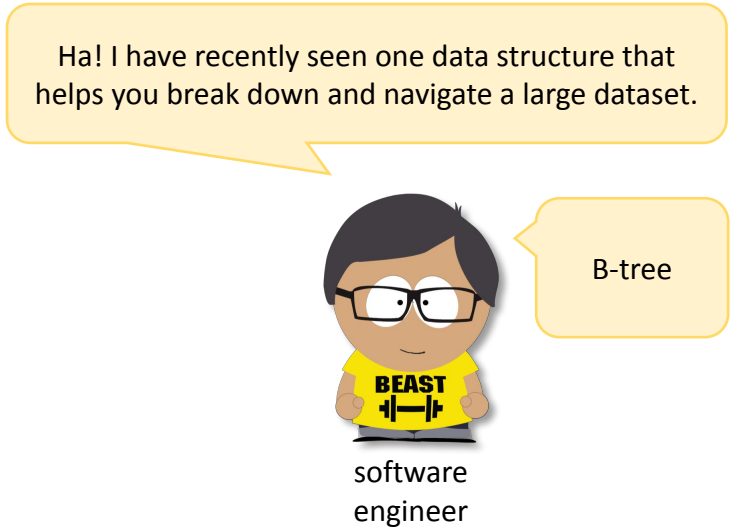
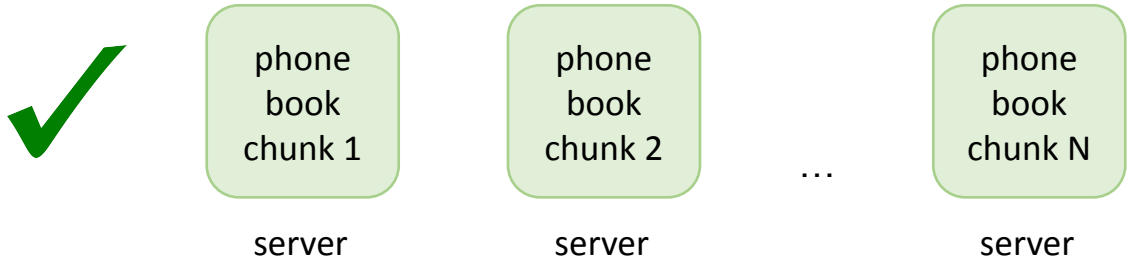
Host discovery



How would you design such a phone book?

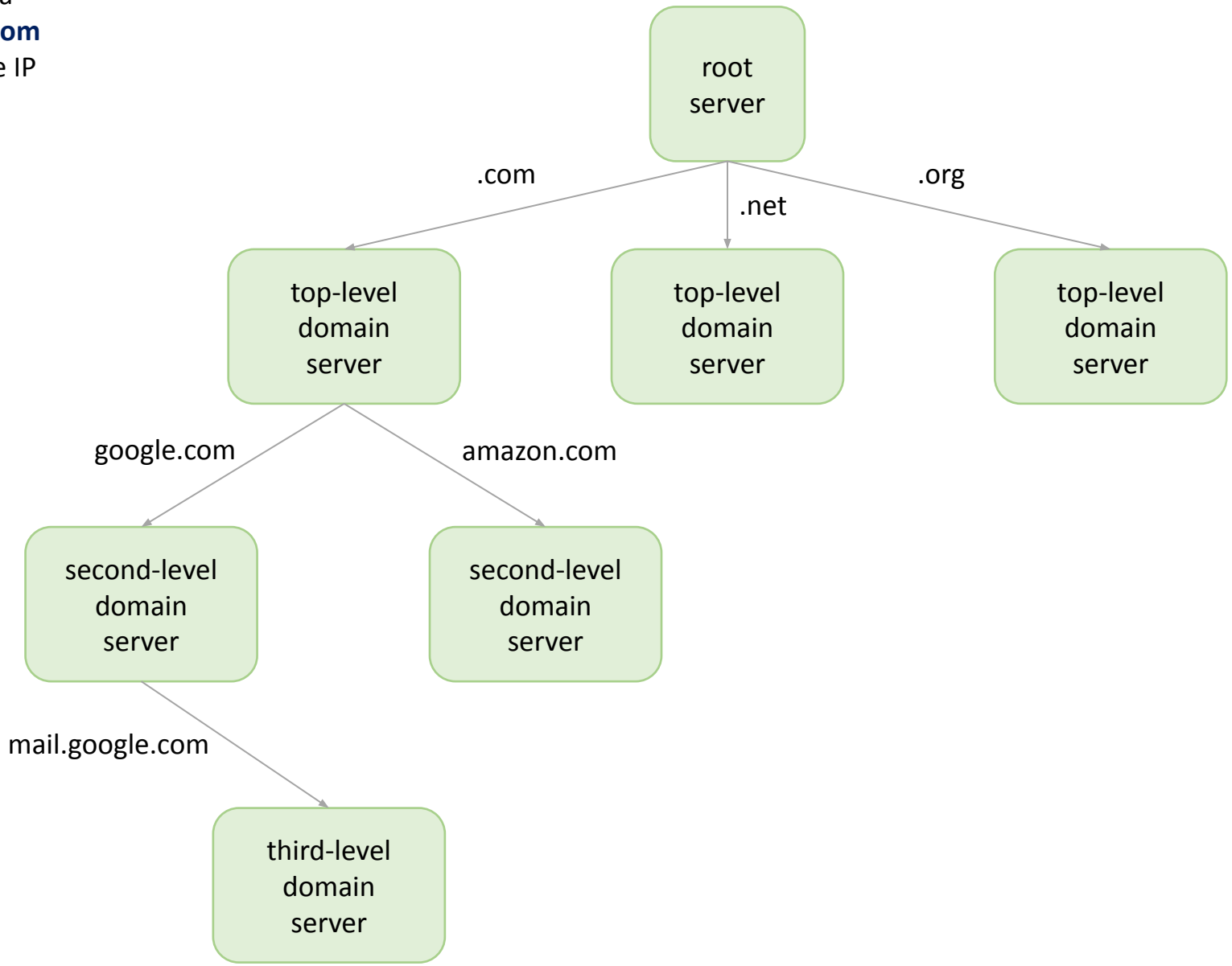
Host discovery





Host discovery

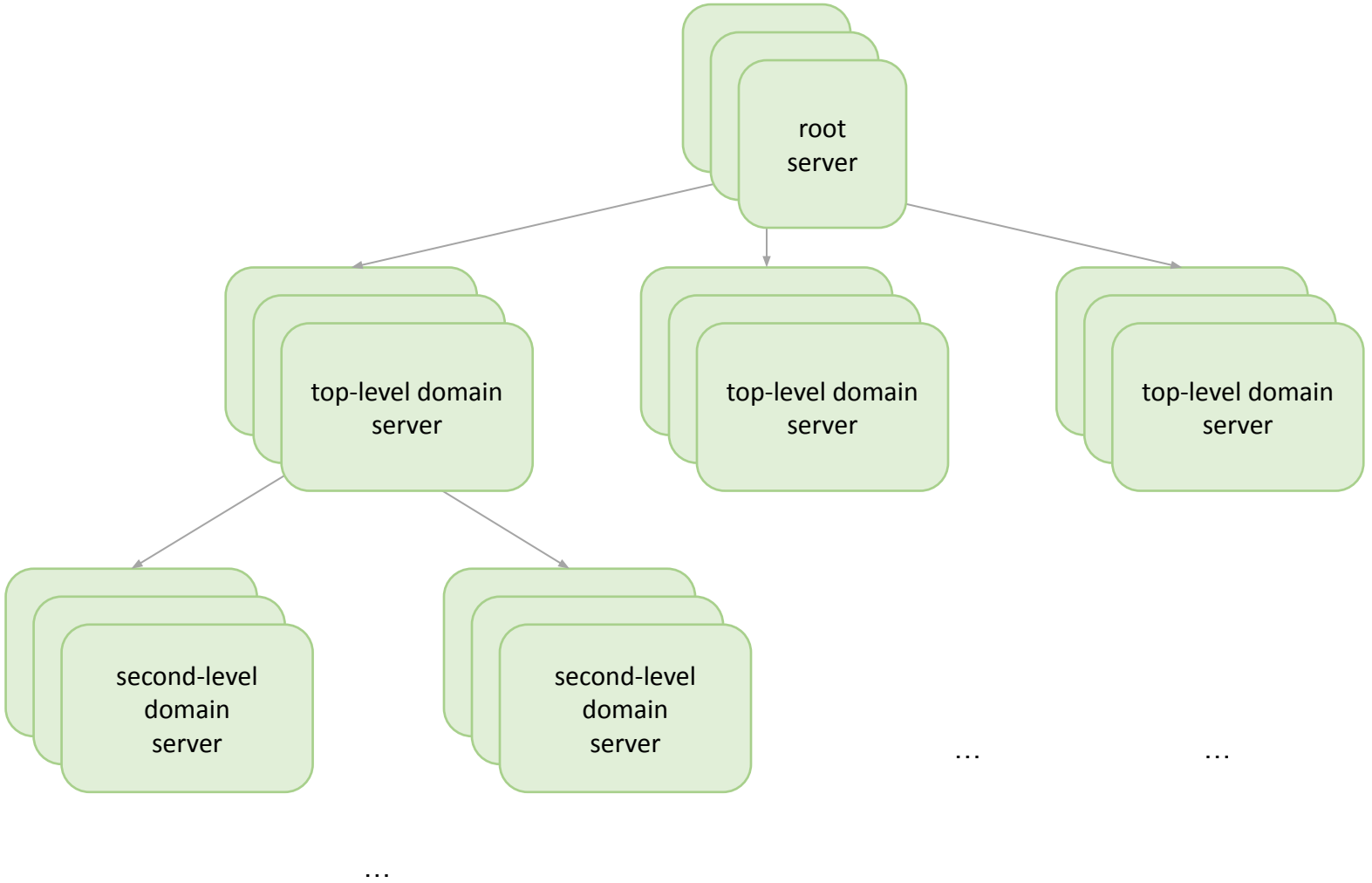
looking for a
mail.google.com
domain name IP



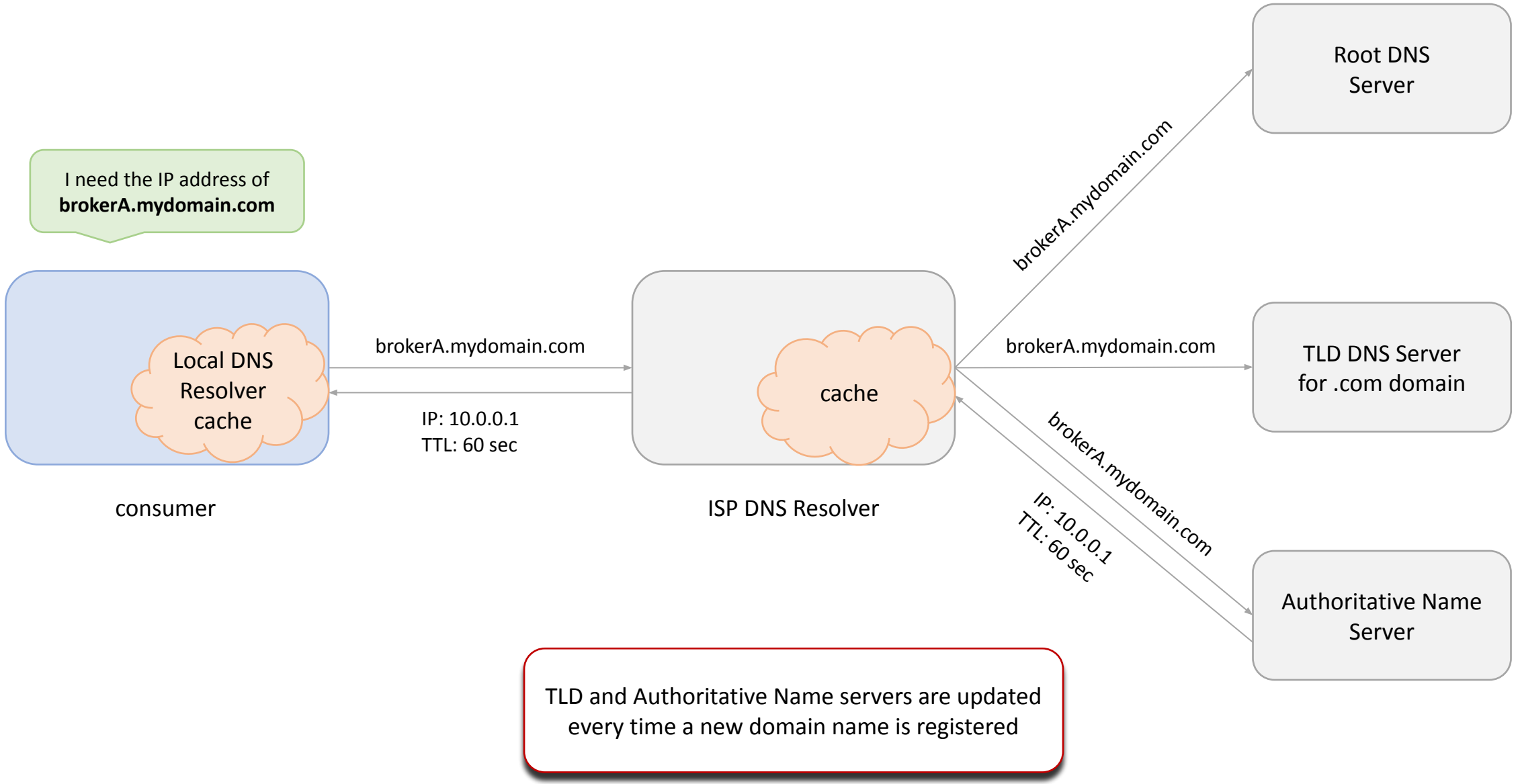
Host discovery

How to make the system more reliable and scalable (reads) ?

- build redundancy on every level
- replication
- caching



Host discovery



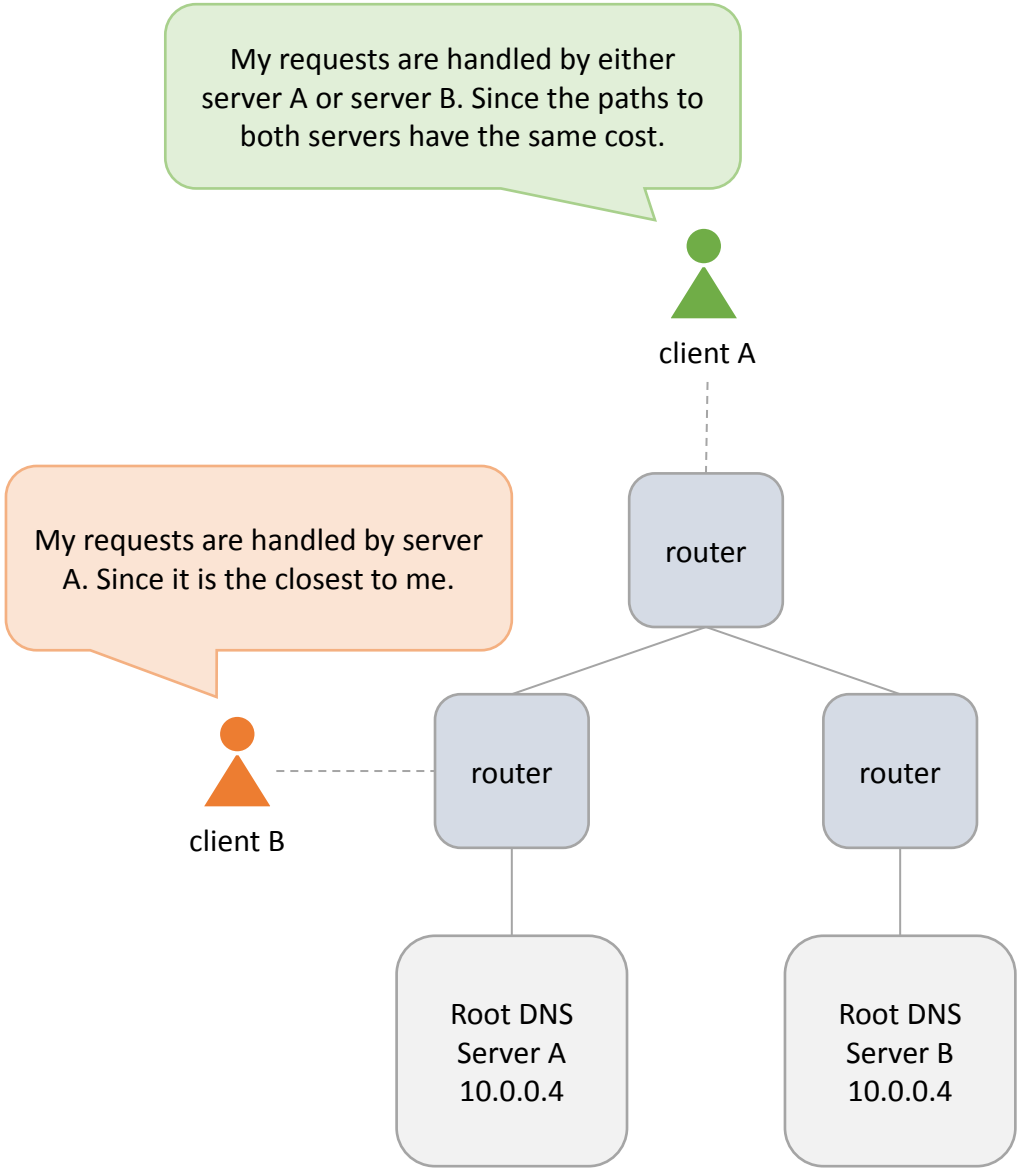
TLD and Authoritative Name servers are updated every time a new domain name is registered

Host discovery

DNS root server

- there are hundreds of root name servers spread all over the world
- root servers are divided into 13 sets
- 12 organizations operate each set of servers
- every ISP DNS Resolver server knows a list of 13 IP addresses
- anycast routing is used to distribute requests across root servers based on load and proximity
- caching is used heavily in different places to off-load the root servers
  (web browser, OS, ISP DNS Resolver)

Host discovery



anycast

network routing method

- helps provide high availability
- helps implement load balancing
- widely used for DNS and content delivery networks (CDN)
- helps mitigate DDoS attacks

Host discovery

DNS record types

name	type	value
foo.example.com.	A	192.0.1.17
bar.example.com.	CNAME	foo.example.com.
example.com.	TXT	“some text”