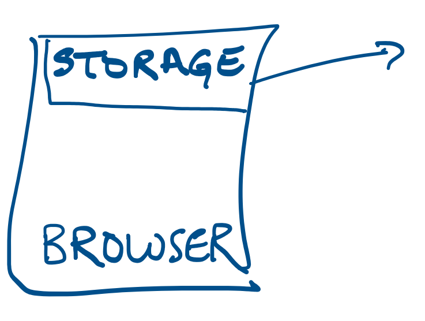
Horizontal Scaling: Load Balancer + DNS

Wednesday, 2 September 2020 6:05 PM

DNS : Domain Name System is like a phonebook of Internet.

- Clients interact through IP addresses.
- DNS translates domain names to IP addrs.
- Each device connected to internet has a unique IP addrs. DNS removes the need to remember those IP addresses.

STEP 1



abc.xyz : 192.168.0.0
facebook.com : 27.255.63.92
google.com : 57.63.22.110

CHECK LOCAL STORAGE

STEP 2 Ask OS, OS will check if the requested domainName is ~~ent~~ in its local storage. If not, ask RESOLVER (ISP).

Stop here and draw hierarchy

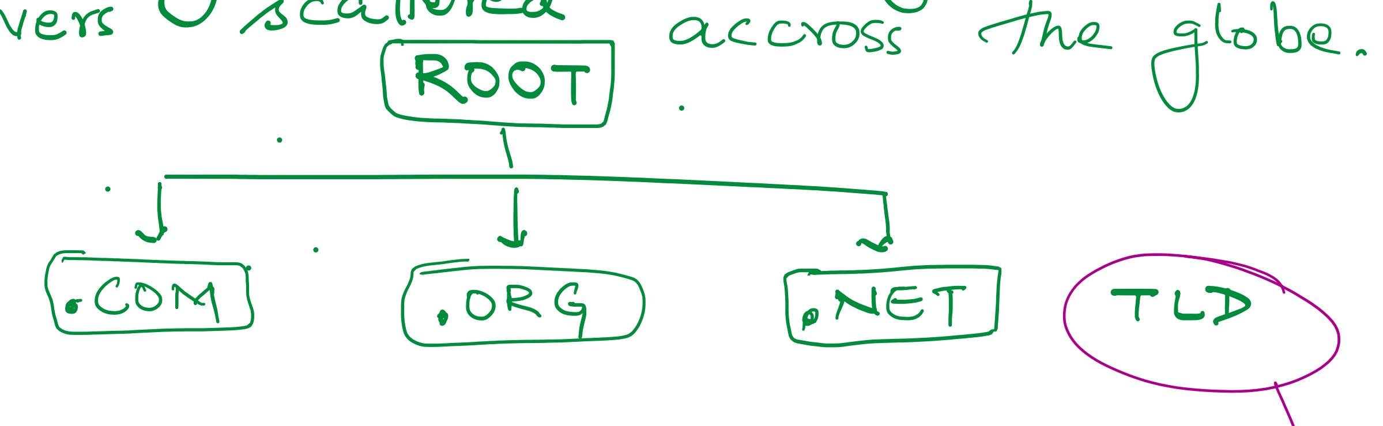
STEP 3 Resolver checks if local storage. If not lets ask the ROOT.

All resolvers must know where and how to locate ROOT server

STEP 4 : Root server knows where to locate Top-Level Domain server (.com, .org)

- Resolver saves this ip address so that next time request to same domain comes, it doesn't have to come to Root server again.

Root server sits on top of DNS hierarchy. There are only 13 root servers scattered accross the globe.



ROOT : [a-m].root-servers.net

- Internet Corporatn for Assigned Names & Numbers ← Assigned by
- .com was the 1st one to be created in 1985.

STEP 5 : TLD also checks locally first, if not found it returns name-server → authoritative name server

This info is also cached locally be resolvers

How is DNS server resilient?

Authon tive Name-Server : ns1.dnsimple.com

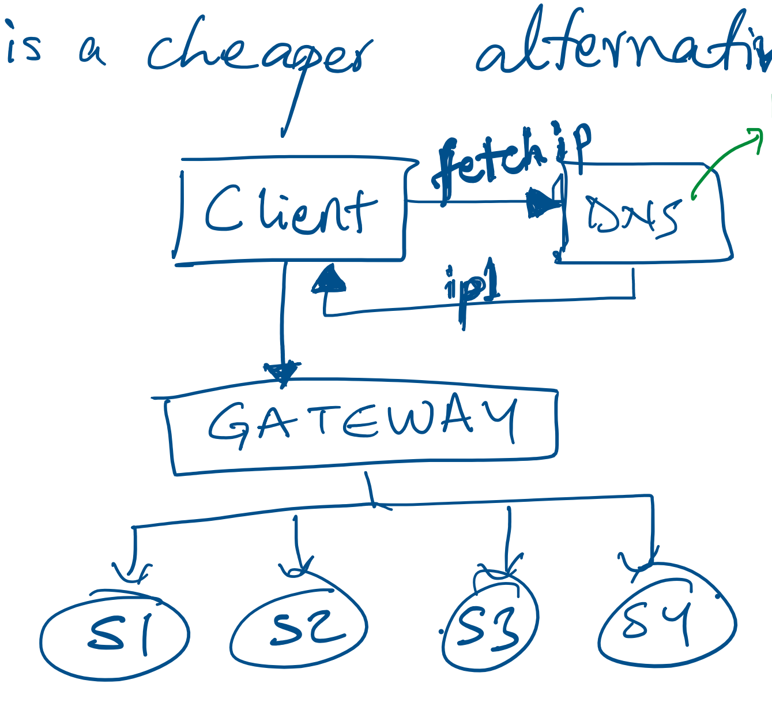
- Wh ever a domain is purchased, the dom n registrar (TLD) saves the list of Authoritative Name servers. (ANS)
- There are multiple ANS which holds the mapping with the latest ip addresses.
- This data is licated to avoid single point of failure.

STEP 6 : ANS returns the ip addrs which is stored in all layers.

ANS → TLD → root → ISP → OS → Client

Delicious : 1000 users : 1 machine 1GB
10,000 users : 10 machines ~~+1~~, 10 GB machine

→ procurring 10 machines with 1 GB RAM is a cheaper alternative



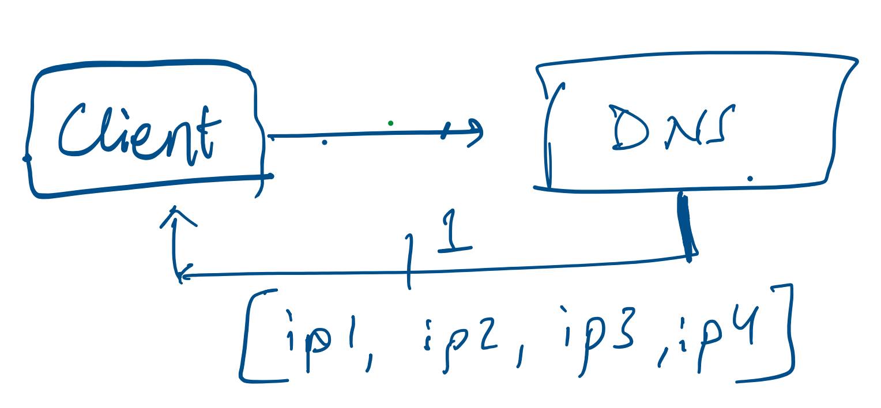
- Gateway is responsible for routing traffic to different servers.
- Takes request from client, forwards it to a server, server processes the req, send the resp to client via gateway.

- We will now be able to serve more customers !!!
- low Gateway becomes my single point - failure.

Solutions

1) Assign a static ip to the node which is running as Gateway.
⇒ Switch if the machine dies.
2) Have multiple machine running and give their ips to the DNS.

→ We saw DNS can return a list of ips as well.



problem still exists

① 1st node will always serve all the requests.
⇒ Randomise at the DNS side before replying to the cli.

) Reduce the amount of work done by this gateway machine so that it easily replaceable.

Properties Of Load Balancer

- Divide the traffic optimally.
- Handle app ser er going down
- l andle adding more app servers

What about instance characterictics ?

- Huge RAM
- Huge no. of connections
- Less storage.