# Route 53

## DNS 101

DNS = Convert Human Friendly domain names into IP addresses.

IP4 (32 bit), IP6 (128 bits) - created to address exhaustion of IP addresses in IP4 space

VPCs are now IP6 compatible.

**Domain**

**Top Level domain**: Last part of a domain name (www.domain.**com**, .edu etc.)

**Second level domains** (www.**domain**.com)

**Domain Registrars** - assign domain names under one or more top level domain names. Such as GoDaddy.com

### Types of DNS Records

1. SOA Record
   1. Name of server that supplied the data for the zone
   2. Zone Admin
   3. Current Version
   4. Seconds a Secondary Server should wait before checking for updates
   5. Seconds to wait before retrying a zone transfer
   6. TTL of data resource records
2. NS Record
   1. Name Server records used to provide top Level Domain servers a destination authoritative DNS Server
   2. AWS is now a Domain Registrar as well.
3. A Record
   1. Address record
   2. Provides the IP address for the DNS name
4. TTL
   1. Time to Live record
   2. The time an address resolution cache is valid for
5. CNAME
   1. Canonical
   2. resolve one domain name to another
   3. Can’t use CNAME for Naked domains
6. ALIAS record
   1. only on AWS
   2. Used to map resource record sets in your hosted zone to ELBs, Cloud Front Distribution, or S3 buckets that are configured as websites. E.g. you can have DNS names which point to ELB domain names -w/o the need for changing IP when ELB Ip changes.  Route 53 automatically recognizes changes in the record sets. Most common usage- map naked domain name (zone apex) to ELB names. Always use Alias v/s CNAME as Alias has no charges. Answering CNAME queries has a cost on Route53
   3. Similar to CNAME and can be used for naked domain names
7. AAAA Record – Ipv6

**TIP***: ELBs do not have a pre-defined IPv4 address. You resolve them using a DNS name*

**TIP:** CNAME vs ALIAS: Charged if you use Alias. Always chose Alias over CNAME

### Hosted Zone

Collection of resource record sets. NS, SOA, CNAME, Alias etc. types of records for a particular domain.

e.g. <https://www.tcpiputils.com/dns-lookup/google.com/ALL>

## Lab – Register a domain name

Network and Content Delivery 🡪 Route 53 🡪 Domains 🡪 Registered Domains 🡪 Register a new domain

NS Records and SOA records are created automatically

## Route53 Routing Policies

* Simple (default)
  + Used for a single server
* Weighted
* Latency
* Failover
* Geolocation

Go to Route53

By default, a NS and SOA record is created

* Create Record Set
* Make a naked record.
* Select Alias=Yes
* Select target: Will show your load balancers
* Policy=Simple

Most of the questions are scenario based.

1. Weighted – send x% of traffic to site A and remainder (100 – x) % of it to site B. Need not be two different regions. Can be even two different ELBs. This split is over length of day not based on number of individual subsequent requests.

Weights – a number between 0 and 255. Route53 calculates auto %age

AWS Takes Global view of DNS – not local / ISP view.

A/B testing is perfect use case for Weighted Routing policy

1. Latency – allows you to route traffic based on lowest network latency for your end user. To the region which gives fastest response time

Create record set for EC2 or ELB resource in each region that hosts website. When R53 receives a query it will then determine response based on lowest latency

How will the users get the best experience? – evaluated dynamically by R3.

1. Failover – When you want to create an active /passive setup. DR site. R53 monitors health of site. If active fails then R53 routes traffic to passive site. Here you designate a primary and secondary endpoint for your hosted zone record.
2. Geo-location – Choose where to route traffic based on geographic location of users.

Different from Latency based as the routing is hardwired irrespective of latency.

## DNS Exam Tips

* ELBs cost money – ensure to delete them when not using.
* ELBs always have DNS name – no public IP Addresses. Trick question might induce you into believing IP4 address for ELB
* Remember difference between Alias and CNAME
* Given a choice between Alias Record vs CNAME – always choose Alias. Alias records are free and can connect to AWS resources.
* R53 supports zone apex records
* With Route 53, there is a default limit of 50 domain names. However, this limit can be increased by contacting AWS support.

Naked domain – which doesn’t have the www in front of the domain e.g. acloud.guru. [www.acloud.guru](http://www.acloud.guru) isn’t