Route 53

## Service Overview

*Amazon Route 53 is a highly available and scalable Domain Name System (DNS) web service.*

*Amazon Route 53 common DNS Types:*

* *The SOA record stores information about:* 
  + *The name of the server that supplied the data for the zone.*
  + *The administrator of the zone.*
  + *The current version of the data file.*
  + *The default number of seconds for the time-to live file on resource records*
* *NS stands for Name Server Records They are used by Top Level Domain servers to direct traffic to the Content DNS server which contains the authoritative DNS records.*
* *An “A” record is the fundamental type of DNS record. The “A” in A record stands for “Address”. The A record is used by a computer to translate the name of the domain to an IP address. For example, http://www.acloud.guru might point to* [*http://123.10.10.80*](http://123.10.10.80)
* *The length that a DNS record is cached on either the Resolving Server or the users own local PC is equal to the value of the “Time To Live” (TTL) in seconds. The lower the time to live, the faster changes to DNS records take to propagate throughout the internet*
* *A Canonical Name (CName) can be used to resolve one domain name to another. For example, you may have a mobile website with the domain name http://m.acloud.guru that is used for when users browse to your domain name on their mobile devices. You may also want the name http://mobile.acloud.guru to resolve to this same address*
* *Alias records are used to map resource record sets in your hosted zone to Elastic Load Balancers, CloudFront distributions, or S3 buckets that are configured as websites. Alias records work like a CNAME record in that you can map one DNS name (www.example.com) to another ‘target’ DNS name (elb1234.elb.amazonaws.com)*
* *Key difference - A CNAME can’t be used for naked domain names (zone apex record.) You can’t have a CNAME for http://acloud.guru, it must be either an A record or an Alias*

*Amazon Route 53 Traffic Flow makes it easy for you to manage traffic globally through a variety of routing types:*

* *Simple Routing Policy If you choose the simple routing policy you can only have one record with multiple IP addresses. If you specify multiple values in a record, Route 53 returns all values to the user in a random order*
* *Weighted Routing Policy Allows you split your traffic based on different weights assigned. For example, you can set 10% of your traffic to go to US-EAST-1 and 90% to go to EU-WEST-1*
* *Latency-Based Routing Allows you to route your traffic based on the lowest network latency for your end user (ie which region will give them the fastest response time). To use latency-based routing, you create a latency resource record set for the Amazon EC2 (or ELB) resource in each region that hosts your website. When Amazon Route 53 receives a query for your site, it selects the latency resource record set for the region that gives the user the lowest latency. Route 53 then responds with the value associated with that resource record set*
* *Geolocation Routing Policy Geolocation routing lets you choose where your traffic will be sent based on the geographic location of your users (ie the location from which DNS queries originate). For example, you might want all queries from Europe to be routed to a fleet of EC2 instances that are specifically configured for your European customers. These servers may have the local language of your European customers and all prices are displayed in Euros*
* *Failover Routing Policy Failover routing policies are used when you want to create an active/ passive set up. For example, you may want your primary site to be in EU-WEST-2 and your secondary DR Site in AP-SOUTHEAST-2. Route53 will monitor the health of your primary site using a health check. You can set health checks on individual record sets.*
  + *If a record set fails a health check it will be removed from Route53 until it passes the health check.*
  + *You can set SNS notifications to alert you if a health check is failed.*
* *Geoproximity Routing (Traffic Flow Only) Geoproximity routing lets Amazon Route 53 route traffic to your resources based on the geographic location of your users and your resources. You can also optionally choose to route more traffic or less to a given resource by specifying a value, known as a bias. A bias expands or shrinks the size of the geographic region from which traffic is routed to a resource. To use geoproximity routing, you must use Route 53 traffic flow*
* *Multivalue Answer Policy Multivalue answer routing lets you configure Amazon Route 53 to return multiple values, such as IP addresses for your web servers, in response to DNS queries. You can specify multiple values for almost any record, but multivalue answer routing also lets you check the health of each resource, so Route 53 returns only values for healthy resources. This is similar to simple routing however it allows you to put health checks on each record set*

## Use cases / Considerations

*Amazon Route 53 effectively connects user requests to infrastructure running in AWS – such as Amazon EC2 instances, Elastic Load Balancing load balancers, or Amazon S3 buckets – and can also be used to route users to infrastructure outside of AWS. You can use Amazon Route 53 to configure DNS health checks to route traffic to healthy endpoints or to independently monitor the health of your application and its endpoints.*

*Amazon Route 53 also offers Domain Name Registration – you can purchase and manage domain names such as example.com and Amazon Route 53 will automatically configure DNS settings for your domains.*

*You can buy domain names directly with AWS. • It can take up to 3 days to register depending on the circumstances*

## Governance

*Monitoring tools:*

* *Amazon Route 53 Traffic Flow*
* *CloudWatch*

## Cautions

*Amazon Route 53 is a robust DNS service with advanced features, but it has several important limitations:*

* *Route 53 private endpoints are not available over VPN/DirectConnect. When a private zone is created and associated with a VPC, Route 53 creates a DNS endpoint for that VPC. A forwarder is required so that on-premise clients can resolve records in a Route 53 hosted zone, however the Route 53 private endpoint address for the VPC is not routable across VPN or DirectConnect.*
* *Route 53 provides no forwarding or conditional forwarding options for domains used on an on-premise network.*
* *Route 53 does not support private zone transfers, for example, if you have the root level domain “example.com” registered somewhere, you cannot appoint Route 53 as the authoritative source for “cloud.example.com”.*

*You can implement several workarounds for forwarding Route 53 DNS queries to external servers—but this will still incur latency, because the requests must contact Amazon infrastructure first, and are only then forwarded to the external server.*

*In addition, at the time of this writing, Amazon Route 53*[*does not support*](https://aws.amazon.com/route53/faqs/#support_dnssec)*the DNSSEC standard, which digitally signs DNS records to ensure they are identical to the information published by the DNS name server. DNSSEC can prevent several types of DNS attacks, including man in the middle (MITM) attacks.*

## Pricing considerations

[Amazon Route 53 pricing - Amazon Web Services](https://aws.amazon.com/route53/pricing/?nc1=h_ls)

## More details

***Guide****:* [*https://docs.aws.amazon.com/Route53/latest/DeveloperGuide/Welcome.html*](https://docs.aws.amazon.com/Route53/latest/DeveloperGuide/Welcome.html)

***Video****:* [*AWS re:Invent 2018: Introduction to Amazon Route 53 Resolver for Hybrid Cloud (NET215)*](https://www.youtube.com/watch?v=D1n5kDTWidQ)