Domain name :

The name, such as example.com, that a user types in the address bar of a web browser to access a website or a web application. To make your website or web application available on the internet, you start by registering a domain name. For more information, see How Domain Registration Works (p. 1).

Domain registrar : A company that is accredited by ICANN (Internet Corporation for Assigned Names and Numbers) to process domain registrations for specific top-level domains (TLDs). For example, Amazon Registrar, Inc. is a domain registrar for .com, .net, and .org domains.

Top-level domain (TLD) : The last part of a domain name, such as .com, .org, or .ninja. There are two types of top-level domains.

Generic top-level domains : These TLDs typically give users an idea of what they'll find on the website. For example, domain names that have a TLD of .bike often are associated with websites for motorcycle or bicycle businesses or organizations. With a few exceptions, you can use any generic TLD you want, so a bicycle club could use the .hockey TLD for their domain name.

Geographic top-level domains : These TLDs are associated with geographic areas such as countries or cities. Some registries for geographic TLDs have residency requirements, while others, such as .io (p. 189), allow or even encourage use as a generic TLD

Domain Name System (DNS) Concepts:

hosted zone: A container for records, which include information about how you want to route traffic for a domain (such as example.com) and all of its subdomains (such as www.example.com, retail.example.com, and seattle.accounting.example.com). A hosted zone has the same name as the corresponding domain. For example, the hosted zone for example.com might include a record that has information about routing traffic for www.example.com to a web server that has the IP address 192.0.2.243, and a record that has information about routing email for example.com to two email servers, mail1.example.com and mail2.example.com. Each email server also requires its own record.

alias record : A type of record that you can create with Amazon Route 53 to route traffic to AWS resources such as Amazon CloudFront distributions , ELB and Amazon S3 buckets.

A record (DNS record) : An object in a hosted zone that you use to define how you want to route traffic for the domain or a subdomain. For example, you might create records for example.com and www.example.com that route traffic to a web server that has an IP address of 192.0.2.234.

A Canonical Name **record** (abbreviated as **CNAME record**) is a type of resource **record** in the Domain Name System (**DNS**) used to specify that a domain name is an alias for another domain (the 'canonical' domain)

The `A` record points a name to a specific IP. For example, if you want the name `blog.dnsimple.com` to point to the server `185.31.17.133` you will configure:

```
blog.dnsimple.com.     A        185.31.17.133
```

The `CNAME` record points a name to another name, instead of an IP. The CNAME source represents an alias for the target name and inherits its entire resolution chain.

Let's take our blog as example:

```
blog.dnsimple.com.      CNAME   aetrion.github.io.

aetrion.github.io.      CNAME   github.map.fastly.net.

github.map.fastly.net.  A       185.31.17.133
```

We use GitHub Pages and we set `blog.dnsimple.com` as a `CNAME` of `aetrion.github.io`, which in turns is itself a `CNAME` of `github.map.fastly.net`, which is an `A` record pointing to `185.31.17.133`. In short terms, this means that `blog.dnsimple.com` resolves to `185.31.17.133`.

To summarize, an `A` record points a name to an `IP`. `CNAME` record can point a name to another `CNAME` or an `A` record.

MX Record Type

Each value for an MX record actually contains two values:

- An integer that represents the priority for an email server
- The domain name of the email server

NS Record Type

An NS record identifies the name servers for the hosted zone. The value for an NS record is the domain name of a name server.

PTR records are used for the Reverse DNS (Domain Name System) lookup. Using the IP address you can get the associated domain/hostname. An A record should exist for every PTR record. The usage of a reverse DNS setup for a mail server is a good solution.

A start of authority (**SOA**) **record** is information stored in a domain name system (DNS) zone about that zone and about other DNS **records**. A DNS zone is the part of a domain for which an individual DNS server is responsible. Each zone contains a single **SOA record**.

SRV Record Type

An SRV record `Value` element consists of four space-separated values. The first three values are decimal numbers representing priority, weight, and port. The fourth value is a domain name. For information about SRV record format, refer to the applicable documentation.

Example for the Amazon Route 53 console

```
10 5 80 hostname.example.com
```

TXT Record Type

A TXT record contains one or more strings that are enclosed in double quotation marks (`"`). When you use the simple routing policy, include all values for a domain (example.com) or subdomain (www.example.com) in the same TXT record.

A single string can include up to 255 characters, including the following:

- a-z
- A-Z
- 0-9
- Space
- - (hyphen)
- ! " # $ % & ' ( ) * + , - / : ; < = > ? @ [\ ] ^ _ ` { | } ~ .

If your TXT record contains any of the following characters, you must specify the characters by using escape codes in the format `\three-digit octal code`:

Naked Domain :

An Internet **domain** name without the "www" or any other subdomains.

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An Internet **domain** name without the "www" or any other subdomains.

authoritative name server

A name server that has definitive information about one part of the Domain Name System (DNS) and that responds to requests from a DNS resolver by returning the applicable information. For example, an authoritative name server for the .com top-level domain (TLD) knows the names of the name servers for every registered .com domain. When a .com authoritative name server receives a request from a DNS resolver for example.com, it responds with the names of the name servers for the DNS service for the example.com domain.

Route 53 name servers are the authoritative name servers for every domain that uses Route 53 as the DNS service. The name servers know how you want to route traffic for your domain and subdomains based on the records that you created in the hosted zone for the domain. (Route 53 name servers store the hosted zones for the domains that use Route 53 as the DNS service.)

For example, if a Route 53 name server receives a request for www.example.com, it finds that record and returns the IP address, such as 192.0.2.33, that is specified in the record.

DNS Query:

Usually a request that is submitted by a device, such as a computer or a smart phone, to the Domain Name System (DNS) for a resource that is associated with a domain name. The most common example of a DNS query is when a user opens a browser and types the domain name in the address bar. The response to a DNS query typically is the IP address that is associated with a resource such as a web server. The device that initiated the request uses the IP address to communicate with the resource. For example, a browser can use the IP address to get a web page from a web server.

DNS resolver

A DNS server, often managed by an internet service provider (ISP), that acts as an intermediary between user requests and DNS name servers. When you open a browser and type a domain name in the address bar, your query goes first to a DNS resolver. The resolver communicates with DNS name servers to get the IP address for the corresponding resource, such as a web server. A DNS resolver is also known as a recursive name server because it sends requests to a sequence of authoritative DNS name servers until it gets the response (typically an IP address) that it returns to a user's device, for example, a web browser on a laptop computer.

Domain Name System (DNS)

A worldwide network of servers that help computers, smart phones, tablets, and other IP-enabled devices to communicate with one another. The Domain Name System translates easily understood names such as example.com into the numbers, known as *IP addresses*, that allow computers to find each other on the internet.

Route 53 supports both IPv4 and IPv6 addresses for the following purposes:

- You can create records that have a type of A, for IPv4 addresses, or a type of AAAA, for IPv6 addresses.
- You can create health checks that send requests either to IPv4 or to IPv6 addresses.
- If a DNS resolver is on an IPv6 network, it can use either IPv4 or IPv6 to submit requests to Route 53.
- **name servers**
- Servers in the Domain Name System (DNS) that help to translate domain names into the IP addresses that computers use to communicate with one another. Name servers are either recursive name servers (also known as DNS resolver) or authoritative name servers.
- For an overview of how DNS routes traffic to your resources, including the role of Route 53 in the process, see How Amazon Route 53 Routes Traffic for Your Domain.

- **private DNS**
- A local version of the Domain Name System (DNS) that lets you route traffic for a domain and its subdomains to Amazon EC2 instances within one or more Amazon virtual private clouds (VPCs)

routing policy

A setting for records that determines how Route 53 responds to DNS queries. Route 53 supports the following routing policies:

  - **Simple routing policy** – Use to route internet traffic to a single resource that performs a given function for your domain, for example, a web server that serves content for the example.com website.
  - **Failover routing policy** – Use when you want to configure active-passive failover.
  - **Geolocation routing policy** – Use when you want to route internet traffic to your resources based on the location of your users.
  - **Latency routing policy** – Use when you have resources in multiple locations and you want to route traffic to the resource that provides the best latency.
  - **Weighted routing policy** – Use to route traffic to multiple resources in proportions that you specify.

- **subdomain**
- A domain name that has one or more labels prepended to the registered domain name. For example, if you register the domain name example.com, then www.example.com is a subdomain. If you create the hosted zone accounting.example.com for the example.com domain, then seattle.accounting.example.com is a subdomain.
- To route traffic for a subdomain, create a record that has the name that you want, such as www.example.com, and specify the applicable values, such as the IP address of a web server.
- **time to live (TTL)**
- The amount of time, in seconds, that you want a DNS resolver to cache (store) the values for a record before submitting another request to Route 53 to get the current values for that record. If the DNS resolver receives another request for the same domain before the TTL expires, the resolver returns the cached value.

- A longer TTL reduces your Route 53 charges, which are based in part on the number of DNS queries that Route 53 responds to. A shorter TTL reduces the amount of time that DNS resolvers route traffic to older resources after you change the values in a record, for example, by changing the IP address for the web server for www.example.com.
- **Health Checking Concepts**

DNS failover

A method for routing traffic away from unhealthy resources and to healthy resources. When you have more than one resource performing the same function—for example, more than one web server or mail server—you can configure Route 53 health checks to check the health of your resources and configure records in your hosted zone to route traffic only to healthy resources.

For more information, see Configuring DNS Failover.

endpoint

The resource, such as a web server or an email server, that you configure a health check to monitor the health of. You can specify an endpoint by IPv4 address (192.0.2.243), by IPv6 address (2001:0db8:85a3:0000:0000:abcd:0001:2345), or by domain name (example.com).

Note

You can also create health checks that monitor the status of other health checks or that monitor the alarm state of a CloudWatch alarm.

health check

A Route 53 component that lets you do the following:

- Monitor whether a specified endpoint, such as a web server, is healthy
- Optionally, get notified when an endpoint becomes unhealthy

- Optionally, configure DNS failover, which allows you to reroute internet traffic from an unhealthy resource to a healthy resource