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Understanding DNS – Part 2

This lesson continues our discussion of the domain name system.

In this lesson, you will get an insight into the complete *DNS query lookup process*, and you will also understand the role of different servers in the *DNS* infrastructure.

Lets' begin…

So, when the user hits enter after typing in the *domain name* into their browser, the browser sends a request to the *DNS Recursive nameserver*, also known as the *DNS Resolver*.

The role of *DNS Resolver* is to receive the client request and forward it to the *Root nameserver* to get the address of the *Top-Level domain nameserver*.

The *DNS Recursive nameserver* is generally managed by our *ISP Internet service provider*. The whole *DNS* system is a distributed system setup in large data centers managed by internet service providers.

These data centers contain clusters of servers that are optimized to process *DNS queries* in minimal time that is in milliseconds.

So, once the *DNS Resolver* forwards the request to the *Root nameserver*, the *Root nameserver* returns the address of the *Top-Level domain nameserver* in response. As an example, the top-level domain for *amazon.com (http://amazon.com) is .com*.

Once the *DNS Resolver* receives the address of the *top-level domain nameserver*, it sends a request to it to fetch the details of the domain name. *Top Level domain nameservers* hold the data for domains using their top-level domains.

For instance, *.com* top-level domain nameserver will contain information on domains using *.com*. Similarly, a *.edu* Top-Level domain nameserver will hold information on domains using *.edu*.

Since our domain is *amazon.com (http://amazon.com)*, the *DNS Resolver* will route the request to the *.com* top-level domain name server.

Once the *top-level domain name server* receives the request from the *Resolver*, it returns the *IP address* of *amazon.com (http://amazon.com)* domain name server.

amazon.com (http://amazon.com) domain nameserver is the last server in the *DNS query lookup process*. The nameserver is responsible for *amazon.com (http://amazon.com)* domain and is also known as the *Authoritative nameserver*. This nameserver is owned by the owner of the domain name.

Then, DNS Resolver fires a query to the *Authoritative nameserver*, and it returns the *IP address* of *amazon.com (http://amazon.com)* website to the *DNS Resolver*. *DNS Resolver* caches the data and forwards it to the client.

On receiving the response, the browser sends a request to *amazon.com (http://amazon.com)* website's IP address to fetch data from their servers.

Often all this *DNS* information is cached, and the DNS servers don't have to do so much rerouting every time a client requests an *IP* of a certain website.

The *DNS* information of websites that we visit also gets cached in our local machines, that is our browsing devices with a *TTL Time To Live*.

All modern browsers do this automatically to cut down the *DNS query lookup time* when revisiting a website.

This is how the entire DNS query lookup process works.
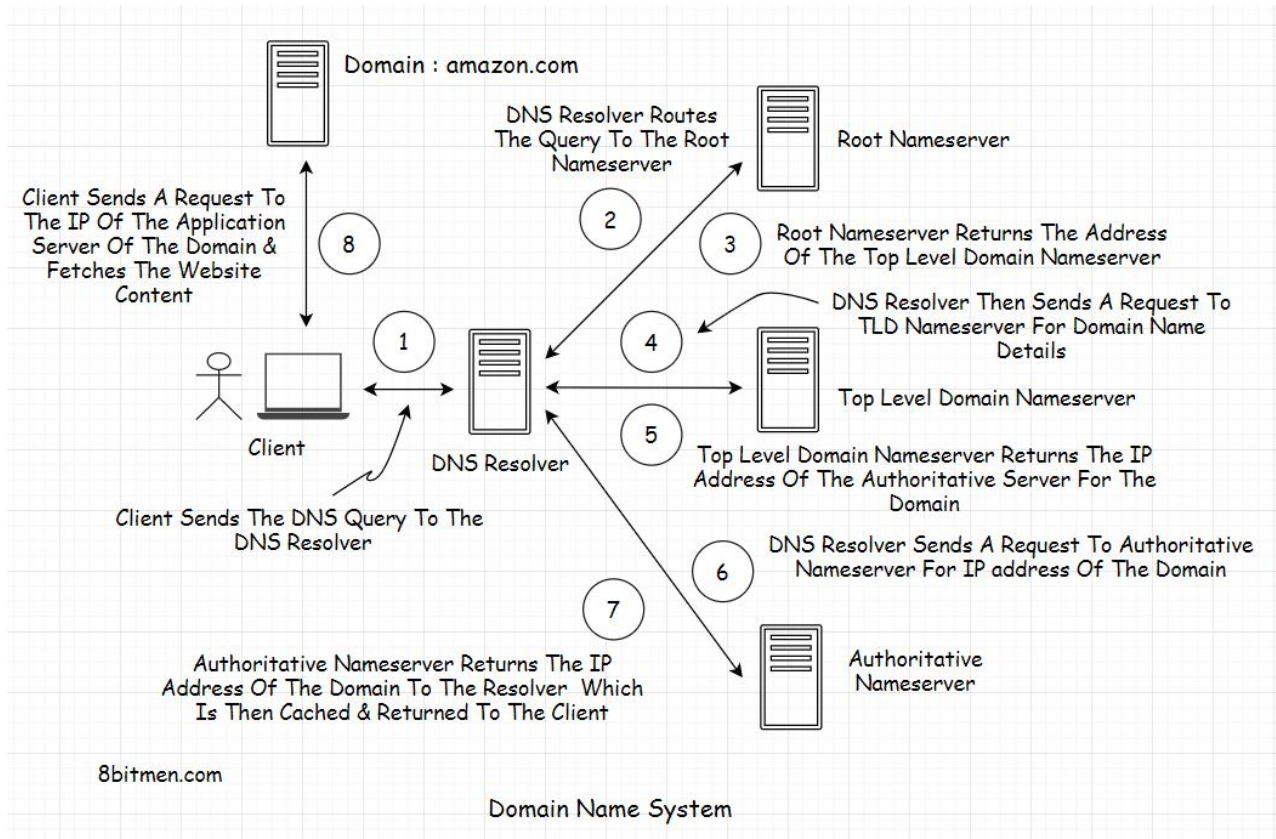
In the next lesson, let's have an insight into *DNS load balancing*.

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