How Data Finds its Way?

A high-level overview of how packets determine and then traverse the path from their source to destination.

WE'LL COVER THE FOLLOWING ^

- Internet protocol & IP addresses
- DNS lookups

So far, we've discussed how the Internet is structured, and how it's abstractions implement the protocols that ensure that the client and server understand one another. Now, we will look into how clients and servers know where they want to send their data and what protocols exist to ensure each end-system on a network has a unique identity that allows it to be reached by other end-systems.

Internet protocol & IP addresses

Internet Protocol, more commonly known as IP, is a network layer protocol that is responsible for assigning addresses to devices in order to give them unique identities that make them reachable and discoverable. Each device on the Internet has a unique IP address that other devices use to connect with it. You can find your own IP address by using the following command line instruction:

```
ifconfig
```

`ifconfig` is the command that works on Linux, which is what we're using on our platform. The command `ipconfig` does the same thing on Windows so try that if you are running the command on a local Windows system.

What this means is that once you have your website live on a server, users will be able to connect with it through the IP address of the server and receive

data. You may be wondering now where the IP address comes in if you reach websites through URLs. Well, that's where DNS comes in. Routers across the web do not store URLs for every single website hosted on the Internet; they only know IP addresses and forward packets towards their destinations based on them. Users, however, only know URLs, or *domain names*, for the websites they are visiting. To bridge this clear gap of information, the Internet makes use of **DNS servers**, which serve as translational intermediaries between end-systems and the routers that serve to forward data packets coming from them to their destinations. The process of making a lookup for a domain name on a DNS server and obtaining its corresponding IP address is referred to as a **DNS resolution**.

Quick Quiz on IP!

**1** Which of the following layers is IP a protocol of?

COMPLETED 0%

1 of 2 ‹ ›

DNS lookups

So far, we know everything about the communication between a client and server on the Internet from how the connection forms to how they find one another to exchange messages through DNS servers. To end the discussion on
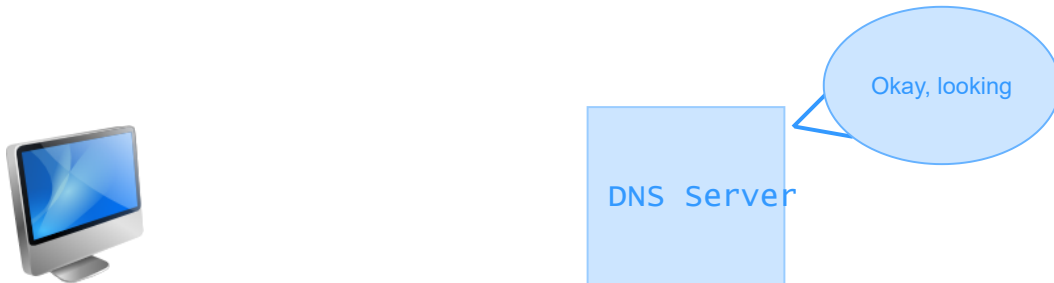
networks, the last thing to be articulated is exactly how lookups in DNS servers work. Let's take a look at the steps involved in the interaction between any end-system on the web, referred to as the client in this context, and a DNS server!
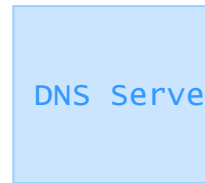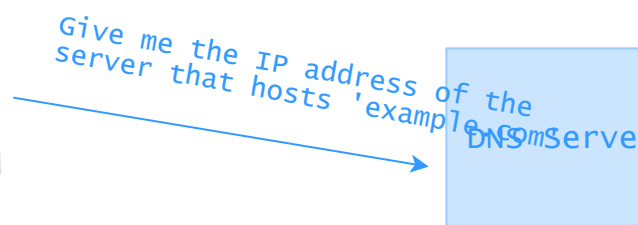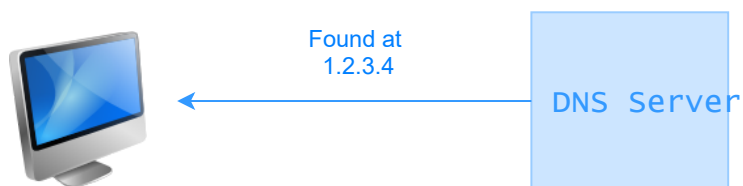
3 of 4

4 of 4

That covers everything you need to know about the communication between

clients and servers on the Internet and exactly how your application would reach users. This might be a little overwhelming, and to simplify these

concepts a little, the next lesson includes a video on the life of a data packet on the web that shows exactly how data goes from a client to server.