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CTEC145 Web Server Technology

Assignment: Understanding DNS

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In its most basic form, the Internet has three core elements (User, Root Server and Content) that make up how information is requested and shared on the World Wide Web. This document will cover some basics about the web DNS system and the relationship between content servers, root servers and the host (you browsing the internet). First, I will explain how the host requests information through a web browser and uses the DNS system to resolve Domain Names. Next I will explain the role of a root server in the information request and how it relates to a content server. I will also analyze the relationship between a web server that stores its domains content on it and a user making a request and how the user ultimately receives the information locally using DNS. With this document, you will better understand how you get the information you search for through the internet on your web browser.

When a user types in a domain name into their web browser (ex. [www.google.com](http://www.google.com)), they expect to see a website load after they hit the enter key. Without DNS, nothing would happen because your computer doesn’t talk in that kind of language. Your computer (the host) needs the actual IP address of the content server to have access to the website files. To obtain the content server IP, your domain name search is being resolved through contacting numerous Name Servers that store the IP information in a Zone File. When you’ve reached a Name Server with that IP address stored on it, it helps you out by sending you back that IP address so that you can start downloading files needed to display the website.

Root Servers are a network of servers that store information for TLD (Top-level Domain) requests (in its Zone Files) that point a user to a resolving name server with the domain IP address they are looking for. The root server is the top level of the DNS hierarchy and handles requests from the nearest geolocation of its requesting user. The root server actually has no direct relationship between itself and where the domain content is stored, but plays a vital role in helping the user request find an appropriate name server to resolve the IP address they need. The goal is to limit the number of requests on the web when trying to find a server that currently has a domains IP information cached on it.

So how does a user making a request actually receive the data they want? If you can successfully find the IP address for that domain through a resolving name server, you can then start talking to the server which stores the website files on it. When a web server is created and has been connected to the internet, it actually has its own DNS server running that stores a zone file on it for its local network. This is ultimately how it gets distributed onto other resolving name servers around the globe. Without an originating Zone File with proper Records, the domain name may never be resolved by outside servers. This is an important understanding of how each piece of this user-to-information connection happens and why the DNS system is a necessity in handling a user’s request to resolve the IP information they need so badly.

It is important to understand the relationship between a User, a Root Server and a Web Server and what happens in the background when the user requests information for a given domain. When we search for information on the internet, the Domain Name System is how we ultimately talk to servers which store the content we want on them. I explained how a user enters a domain name and how name servers located around the globe relay cached information about that domains IP so the request can be fulfilled. I also demonstrated how root servers help us quickly find appropriate name servers for domain name resolution. Lastly, I explained the function and importance of a Zone File and the Records that are stored within so the information can actually be found by the user. Without the User, nobody would be looking for information. Without the content, users wouldn’t have anything to search for. Without DNS and its Root Servers, nobody would be able to find anything they search for. This is why these three core elements are what create a successful system of information sharing we call the Internet.