A Rough Guide How the Domain Name System Works

The Domain Name System is the key to the Internet. The system functions sort of like a phone book. The Domain Name System converts the human-language hostnames into the numbers that computers understand. It is complicated! However, it works very well and is nearly seamless. This document illustrates the basics of how the DNS works.

1 – You are sitting at your computer and want to visit the University at Albany Web site. Sounds like a great idea!

So, you type the host name www.albany.edu into the address bar of your browser.

What does she mean by “www.albany.edu”?

2 – Unfortunately, your computer does not know what www.albany.edu means! That is “human language” and computers only understand non-human language, such as bits, bytes, 1s and 0s.

Your computer now has to look up the IP (Internet Protocol) address of the Web site.

I thought it was in here somewhere!

3 – The first thing your computer does is check to see if it has the IP is in storage already. If it doesn’t the computer has to ask the DNS.

4 – Your computer sends out a request that asks the DNS (Domain Name System) what the IP address of Albany.edu is.

Yo, Yo, Yo, what’s the IP address for www.albany.edu?

Domain Name Server
5 – The request first goes to a “local” server, perhaps at your Internet Service Provider.

6 – If the “local” DNS server doesn’t know the IP address, it asks the next one.

7 – If THAT server does not know, it asks the next server. They are all very friendly and get along perfectly well. Eventually, one of the servers knows the IP address and sends the info back down the line to your computer.

8 – Now your computer asks to be connected to 169.226.1.110 and that is now pretty easy.

9 – Your computer requests all the files for the UAlbany home page.
10 – Now the browser you are using on your computer assembles all the files into a Web page and displays the page on your screen.

Let’s see, I will put that one there, I will put that one over there, and I will put that file there…

Wow, that’s a pretty cool Web site!!