YOUR ADDRESS ON THE INTERNET

In our December 2016 Newsletter, I explained how you connect your computer or mobile device to the Internet, and used words and phrases like "router," "local area network," and "Ethernet." This month, we'll talk about how your computer finds another computer to connect to on the Internet (that we call a "server"). This is somewhat "geeky," and I'll return to more mundane subjects next month. I promise.

Where are you?

Mail (in paper envelopes) and people (in cars) find their way to your home because you have a unique address that defines your location. Maybe it's 123 Dimpleswat St.[1], Princeton, NJ, 08540. There's no other house with that address, and it's associated with your name, say, Jane Doe. If folks want to visit you, they can look up Jane Doe in their "Rolodex" and drive to that address.

Computers also have addresses

Just like our homes, every computer connected to the Internet has a unique location comprising four groups of numbers from 0 to 999 called an Internet Protocol (IP) address. These IP addresses are assigned by the Internet service provider (Xfinity, Verizon, etc.), and you can discover your IP address by doing a search on "my ip" in Google. It might be something like 173.73.122.227. Google.com's IP address is 172.217.1.68, and if you type this into your browser address field, up pops Google.

How it works

But you don't have to type 172.217.1.68 to reach the Google site, you just type www.google.com. So, how does that work? Well, the Internet also has "Rolodexes," called Domain Name Servers (DNS), that associate Internet site names, like "google.com," with its IP address, 172.217.1.68. For example, when you type www.google.com to visit Google, here's what happens:

---

[1] I made up that address, in case you didn't know.

1. Your browser sends that request to a DNS on the Internet along with your computer's IP address, 173.73.122.227, which becomes the "return" address label.
2. The DNS replaces the www.google.com with Google's IP address, 172.217.1.6.
3. At this point, your request has a "To:" address of 172.217.1.6 (Google) and a "From:" address of 173.73.122.227 (your computer).
4. The request now goes to one of the thousands of routers on the Internet that selects a path to Google. (That path may go through many other routers depending on where's there's room on the Internet).
5. The request arrives at Google's servers, which retrieve the Google home page (the one with the picture and the search box).
6. Google's servers then send that information to your computer's IP address (remember, it was attached to your original request) by way of the Internet's routers.
7. The information arrives at your computer at 173.73.122.227.
8. Your browser displays the Google page.

And all this happens in *milliseconds*.

It's an amazing communications system, and now you know how it works!

If you have a tech question, your computer seems to have a mind of its own, or you need help formatting a document, drop by the PSRC on Tuesday from 1 to 4 or Friday from 10 to noon and we'll help you!