

# Raspberry Pi Networking Byte-by-Byte

First, let's make sure you are connected to the internet. **What happens when you open google.com in a web browser?** Here are some terms you may consider in your discussion:

- Internet Service Provider (ISP)
- Web Browser
- IP Address
- Local Router
- DNS
- Network Switch
- Web Server
- Packet
- Protocol
- URL
- Top Level Domain

Open Discussion with Group

Which of the following commands can you use to find your Raspberry Pi's **Local IP Address**?

- `$ iwconfig`
- `$ ifconfig`
- `$ netstat -N`
- `$ netstat -c`

ifconfig

What can the command **\$ traceroute maxxpotential.com** tell us?

The path that a request takes from router - ISP - Name Server - Web Host

Do you get the same result when you run **\$ traceroute google.com**?

No - the first few steps are the same, but after ISP the path is different

Experiment with **Visual Traceroute Tool** (<http://www.monitis.com/traceroute/>), are you surprised by what you see?

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What is a web server? Is it **hardware** or **software**?

Both! To be a web server, software needs to be running on hardware. Web server software allows the specific machine to take requests and return responses

Let's run create a web server **locally** by executing the following command:

```
$ python -m SimpleHTTPServer
```

To access your web server, try opening **http://localhost:8000** in your browser. What do you notice about the output in your terminal? To stop your server from the terminal hold **Ctrl+C**  
Can you access your web server by opening **http://[local\_up\_address]:8000** Substitute **[local\_ip\_address]** with the Local IP Address you found earlier.

Open Discussion with Group

Can you access another group's web server? Why or why not?

Yes - because we are on the same network, and I have their local IP address, I can access their web server. If I were on a different network, this would not work to access their webserver

Bonus Commands

- **\$ curl**
- **\$ scp**
- **\$ nmap**
- **\$ grep**
- **\$ tree**
- **\$ reboot**
- **\$ sudo apt-get update && sudo apt-get install sl && sl**
- **\$ tree**
- **\$ pwd**
- **\$ sudo apt-get install rig && rig**