**Assign IP to eth0 (wired) on Raspberry Pi**

**Lab 1-1**

**Ipconfig to get ips**

**Ipconfig /all to get more information, such as MAC Addresses**

**Lab 2-1**

**Time to live exceeded for IP 17**

* **Pinged 10.10.10.20 - it worked**
* **Pinged 127.0.0.1 - it worked**

**Pinging 192.168.0.xx is not working**

**Day 2**

**Assign IP to eth0 (wired).**

**Right click wireless symbol, “Wireless and Wired network settings”**

**iPv4 address: 192.168.100.xx (Pi number)**

**This time it worked, but nobody else got theirs to work, so we didn’t do anything.**

**Lab 2-2**

**Physical address static**

**Wireless address is dynamic**

**Raspberry Pi**

# 

**MAC addresses are 6-byte (48-bits) in length, and are written in MM:MM:MM:SS:SS:SS format. The first 3-bytes are ID number of the manufacturer, which is assigned by an Internet standards body. The second 3-bytes are serial number assigned by the manufacturer**

**Lab 3-1**

**MAC Addresses can be found in the info box below when clicking on the packets.**

**ARPs send out messages**

The ARP request says “Who has 192.168.3.250? Tell 192.168.3.133”

The ARP reply says “192.168.3.250 is at ec:13:db:c8:8e:81”

**Ifconfig Linux**

**Lab 3-2**

**Pinging google grants the same MAC address as the default gateway.**

**Packet Tracer**

Do not save files with same starting letter as others. Or else PC will crash\

**Lab 4-1**

Use Carbon Straight through cables to connect switches to PCs.

**Lab 4-2**

>enable

Show mac-address-table

Do this to see the MAC addresses of PCs in Packet Tracer

**Lab 4-3**

Note for Lab 4-3, had trouble with switch - router connections today.

Remember to turn on “on” button in router from now on in this situation

**Kahoot Notes/Quiz Review:**

NIC’s will only “pay attention to” packets that have it’s MAC as the Destination AMC address

Most popular topology: Star

What “layer” of the OSI model do Hubs operate at? **1**

Hub = networking device, used to connect devices together, sends everything in, whatever goes in goes out.

Network switches **cannot** keep track of IP addresses and Physical Port

When switches don’t know a Destination MAC address - they flood the packet to all ports

Systems on a local network find out each other’s MAC addresses by asking with ARP

CAM table - keeps track of MAC addresses and ports connected to router

The source and Destination MAC addresses in a packet DO change when they cross a router.

A foster 202 workstation is connecting to 8.8.8.8, it will arp to the default gateway

All devices in the same Layer 2 Network are in the same Broadcast Domain

OSI Model:

1. Layer 1 - Physical.
2. Layer 2 - Data Link.
3. Layer 3 - Network.
4. Layer 4 - Transport.
5. Layer 5 - Session.
6. Layer 6 - Presentation.
7. Layer 7 - Application.

Note: OSI model is easier to remember in reverse.

A MAC Address has 48 bits

First 3 parts of MAC are “Organizational Unit Identifier” (OUI)

NICs are interested in Layer 2 MAC Addresses

Hubs are layer 1 devices, send packets to all [ports, and are used in star topologies. They do not only read MAC Addresses

Switch table = MAC and Port addresses

ARP is used to resolve layer 2 addresses from layer 3 addresses

**Lab 5-1**

Need to use a different cable to connect routers - Fiber.

If a router doesn’t have enough ethernet ports, add more to the physical representation in the settings/config menu by clicking on it.

**Lab 6-1**