**Cisco Break Down**:

What is Cisco? - Networking, connections between devices, routers, switches, the internet, etc. Cisco is one of the leading companies in networking and sponsors CP, so one of the events is learning their stuff.

Points distribution for Cisco:

<https://www.uscyberpatriot.org/competition/current-competition/challenges-by-round>

Quiz: ⅓,

Packet Tracer, ⅔

Rounds 1-2: 30 pts total

Rounts State - Semis: 100 pts (same as a VM!)

**Self-Study**:

1. Go to <https://www.netacad.com/>
2. I’m Learning >> 2021 CP Content
   1. Packet Tracer: Do challenges at the end of the chapter
      1. Youtube channels with answers:
         1. Tech Acad (my favorite)
         2. \* some of the exercise numbers do not match up with the solutions for some reason
   2. Quiz: Take notes on stuff
      1. Youtube Channel with lectures
         1. CeeJayII

**Install Packet Tracer**:

1. Go to <https://www.netacad.com/>
2. Log in
   1. Check your gmail for your login info
3. Install Packet Tracer:
   1. I’m Learning >> 2021 Intro to Packet Tracer >> Student Support and Resources >> click on “Download and install the latest version of Packet Tracer” >> Download for your OS

**Basic Vocab (From Cisco)**

Switch

* Switches facilitate the sharing of resources by connecting together all the devices, including computers, printers, and servers, in a small business network. Thanks to the switch, these connected devices can share information and talk to each other, regardless of where they are in a building or on a campus. Building a small business network is not possible without switches to tie devices together.

Router

* Just as a switch connects multiple devices to create a network, a router connects multiple switches, and their respective networks, to form an even larger network. These networks may be in a single location or across multiple locations. When building a small business network, you will need one or more routers. In addition to connecting multiple networks together, the router also allows networked devices and multiple users to access the Internet. Ultimately, a router works as a dispatcher, directing traffic and choosing the most efficient route for information, in the form of data packets, to travel across a network. A router connects your business to the world, protects information from security threats, and even decides which devices have priority over others.

IP Address

* The unique number ID assigned to one host or interface in a network.

Subnet (Subnetwork) and Subnet mask

* Subnetting (from Cisco) is the practice of dividing a network into two or more smaller networks, which increases routing efficiency and enhances the security of the network; A range of IP Addresses
* Subnet mask (from Cisco) - A 32-bit combination used to describe which portion of an address refers to the subnet and which part refers to the host.

VLAN

* (Cisco) VLAN is a group of devices on one or more LANs that are configured to communicate as if they were attached to the same wire, when in fact they are located on a number of different LAN segments
* LAN - A local area network (LAN) is a collection of devices connected together in one physical location, such as a building, office, or home.
* VLAN vs. Subnet?

**4.5.1 Packet Tracer - Inter VLAN Routing**

It’s under module 8 - You only have to know 1-7 for Round 1, but many of the commands/concepts here are used in the earlier modules.

Structure:

Addressing Table at top:

* Has device, interfaces for each device, ip/subnet for each interface, and default gateway for each device
* For competitions, usually complete, but NOT for exercises

Scenario - useless

Instructions

* Do NOT have to go in order, but recommended. Some things need to go first.

Check Results

* Lists everything you need to do to get points
* NOT in the real competition

Access R1

* Enable
* Show ip interface brief
  + See if interfaces are configured, if so to what IP’s
* R1# conf t

Configure sub interfaces (g0/1.10)

* int g0/1.10
  + Interface (access) sub interface G0/1.0
* R1(config-subif)# encapsulation dot1q 10
  + 10 if g1/1.10
* Ip address 172.17.10.1 255.255.255.0
  + First is ip address, second is subnet mask
* exit

Configure the rest of the sub interfaces

* Int g0/1.30
* encapsulation dot1q 30
* ip address 172.17.30.1 255.255.255.0
* exit
* Int g0/1.88
* encapsulation dot1q 88
* ip address 172.17.88.1 255.255.255.0
* exit
* Int g0/1.99
* encapsulation dot1q 99
* ip address 172.17.99.1 255.255.255.0
* int g0/1
* No shut
  + This effectively applies all IP’s we just configures - YOU NEED THIS whenever assigning IP addresses

Basic Switch Configuration: S1

* Enable
* Conf t
* Int vlan 99
  + Interface to vlan 99; nothing new
* ip address 172.17.99.10 255.255.255.0
* exit
* ip default-gateway 172.17.99.10
  + Assigns default gateway - check table for default gateway
* Create Vlans
  + S1 (config): Vlan 10
    - Creates the vlan
  + name Faculty/Staff
    - Names the vlan
  + vlan 20
  + Name Students
  + vlan 88
  + Name Native
  + vlan 99
  + Name management
  + exit
* Assign ports to Vlans
  + Int range fa0/11-17
    - interface into multiple ports
  + Switchport mode access
    - Set port to access mode
  + Switchport access vlan 10
    - Assigns vlans to ports
  + Exit
  + Int range fa 0/18-24
  + Switchport mode access
  + Switchport access vlan 20
  + Exit
  + Int range fa 0/6-10
  + Switchport mode access
  + Switchport access vlan 30
  + Exit
* Assign a port to trunk (S1)
  + Int g0/1
    - Check instructions for this - also says in VLAN/Ports table
  + Switchport mode trunk
  + Switchport trunk native vlan 88
* Disable all unused ports (s1)
  + S1# show interface status
    - List all ports; the ones we did not configure will be disabled
  + conf t
  + int range fa 0/1-5, fa 0/7-10, fa 0/12-17, g 0/2
    - Interface into multiple portst; fa 0/1-5 is a range of 5 ports
  + shut
    - Shuts down the ports
* Configure sub interface 88 as native on the router (R1)
  + encapsulation dot1q 88 native
    - If unsure, do encapsulation dot1q ? which will say if it should be native
* Verify connectivity through ping (Ping from PC to Server)
  + PC1 >> Command prompt
  + ping 172.17.50.254
    - If you get a reply you’re good
  + PC2 >> Command Prompt
  + Ping 172.17.50.254