

## **Project One Network Segmentation**

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CYB-210: Computer Networking

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## **Project One Network Segmentation**

We segmented the network by using 3 VLANs. VLAN 50 is the data VLAN. We are using this for workstations throughout the DMV. Next, we have VLAN 80 which is the video VLAN. This VLAN contains the camera s that we installed. The final VLAN that we are currently using is VLAN 70 which is the guest VLAN. This VLAN contains the WIFI router that guests can use to access the internet while they wait. There is a fourth VLAN, VLAN 150, that VLAN is a marked voice and is reserved for future use.

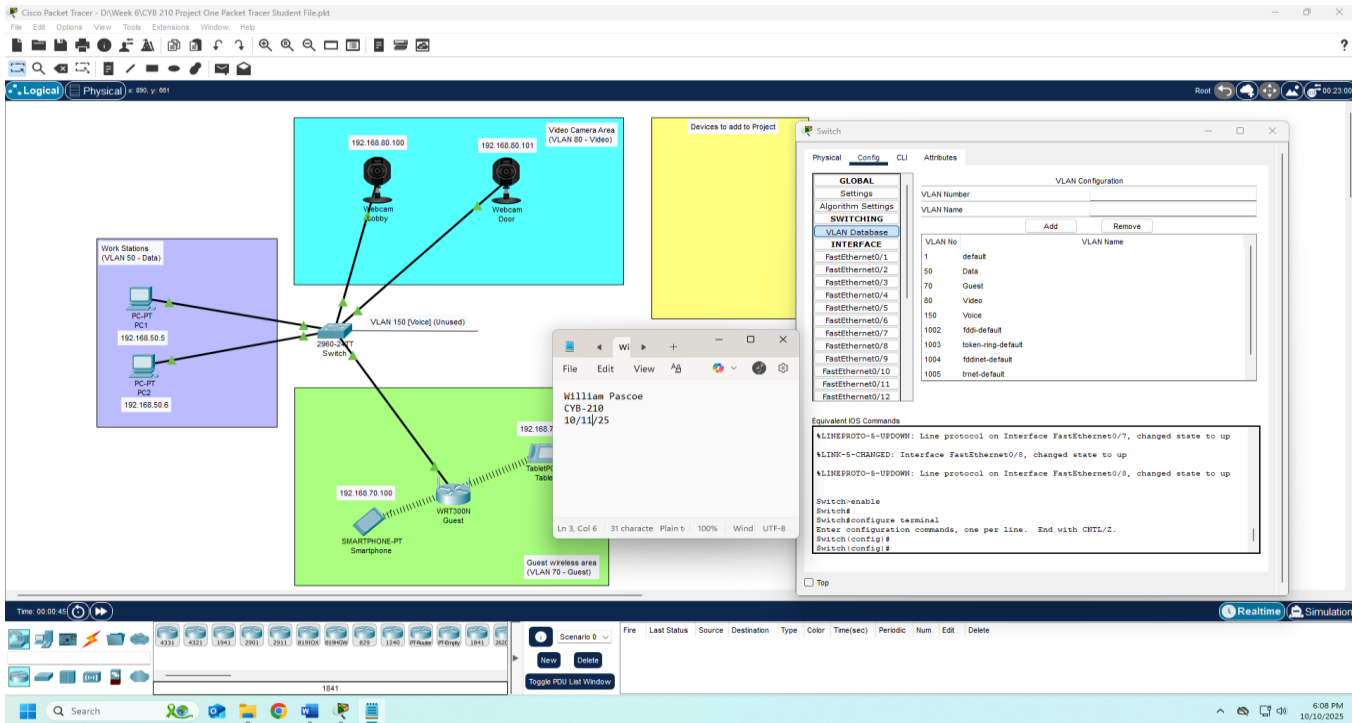
The video VLAN is segmented into its own VLAN and away from the others. This is done so that they can't be accessed though the guest WIFI in the event of a cyberattack. By placing them into their own subnet group we have the capability to add as many cameras as we need in the future. We can also set up protocols so that they can access through the workstation VLAN, VLAN 50, if we wanted certain accounts to have access to them at their workstations.

When creating the guest VLAN we did consider scalability. We gave it its own subnet and set of IP addresses. Even though we currently start the IP address at 100 we can modify it to a lower number, if need be, to allow more IP addresses to be used. Also, by having a short lease time of 4 hours we can ensure that the IP addresses are not tied up for long period of time after they are done being used. This will allow them to be recycled more often and increase the number of users. Another way that we have greater flexibility with the IP addresses is by setting up DHCP. This assigns the IP addresses dynamically so it will ensure that all the numbers in the range are being used as needed and then once a lease expires put that number back in the pool to be reassigned again. We disabled authentication and encryption for this WIFI router. This could be a security concern, but we have segmented it from the other devices on the network by

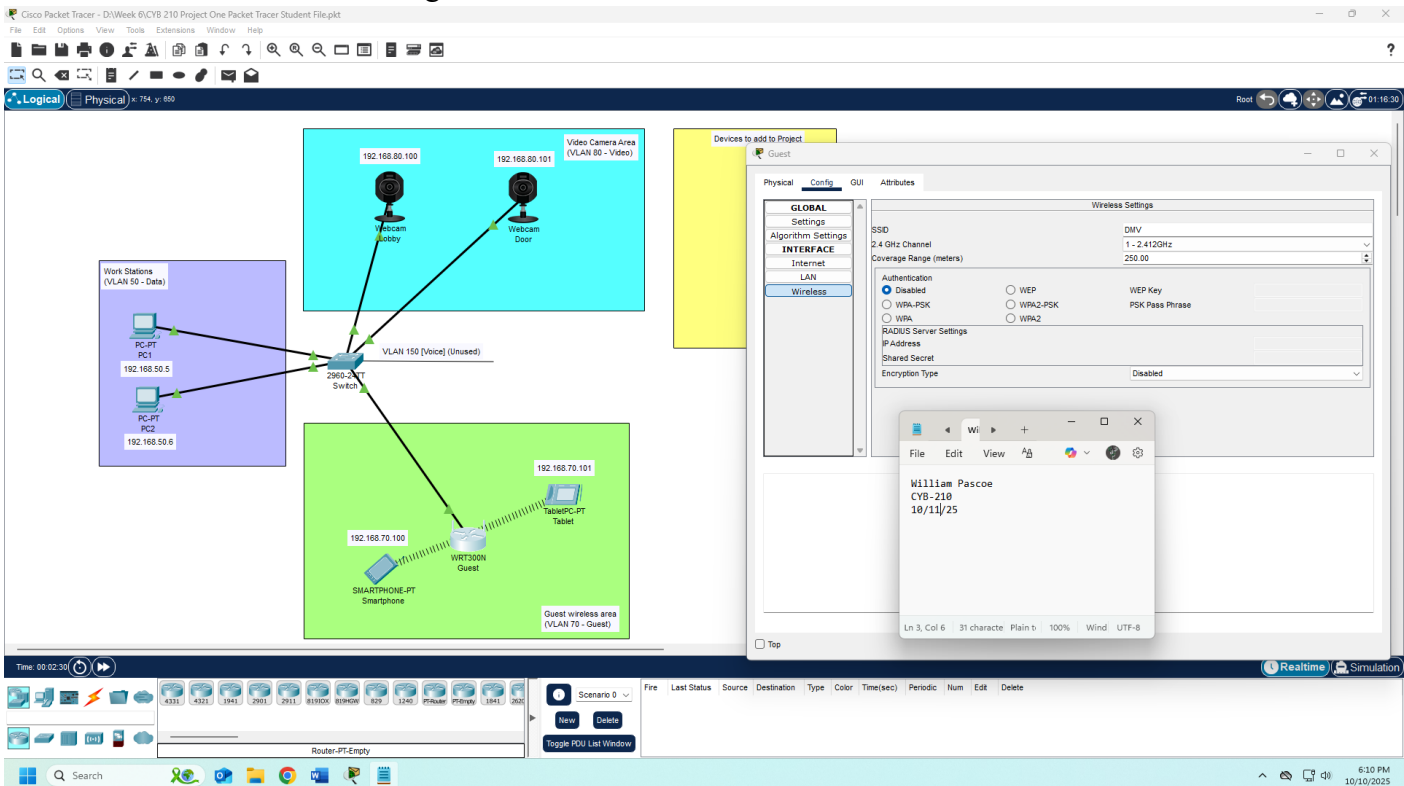
placing it in its own VLAN. The disabling of the authentication was done as more of a convenience to guests wanting to connect to the network.

Screen Shots:

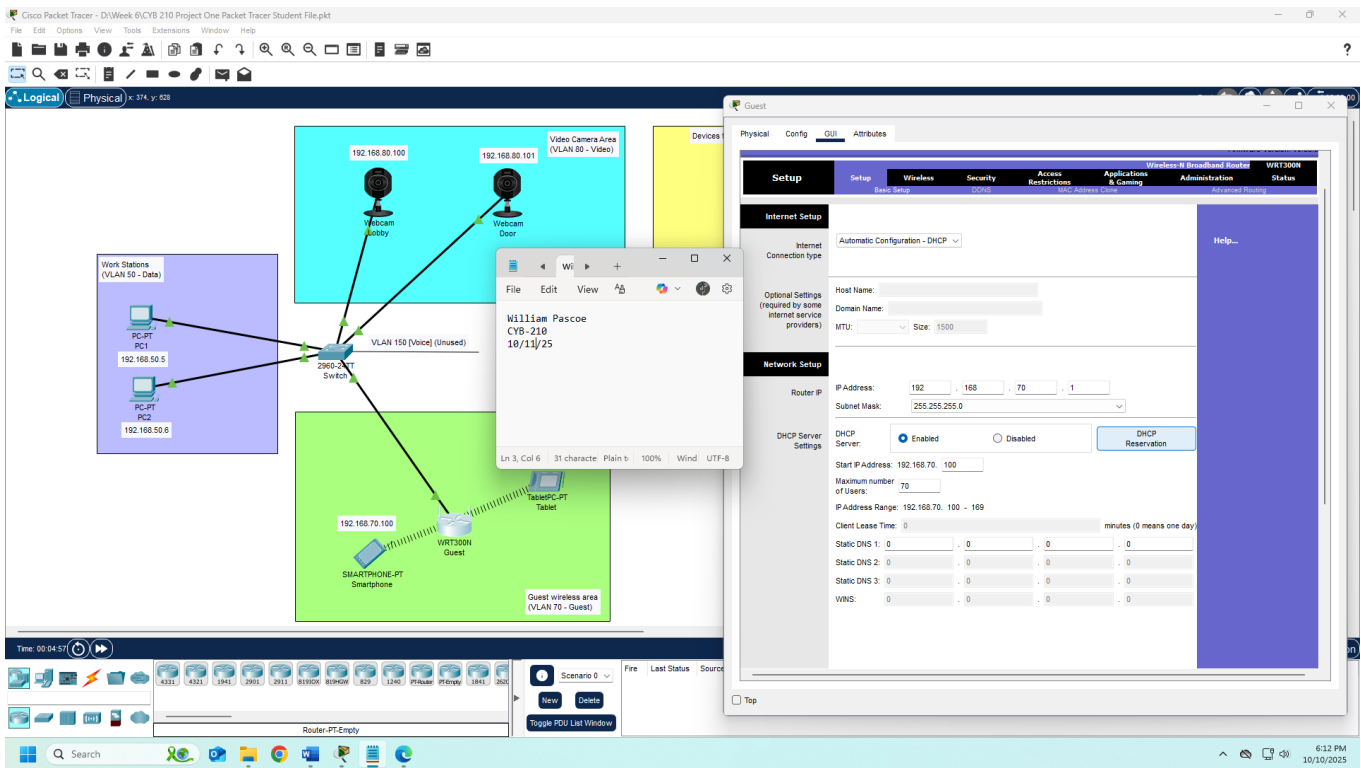
## VLAN Table



## Wireless Router Settings



## DHCP Setup



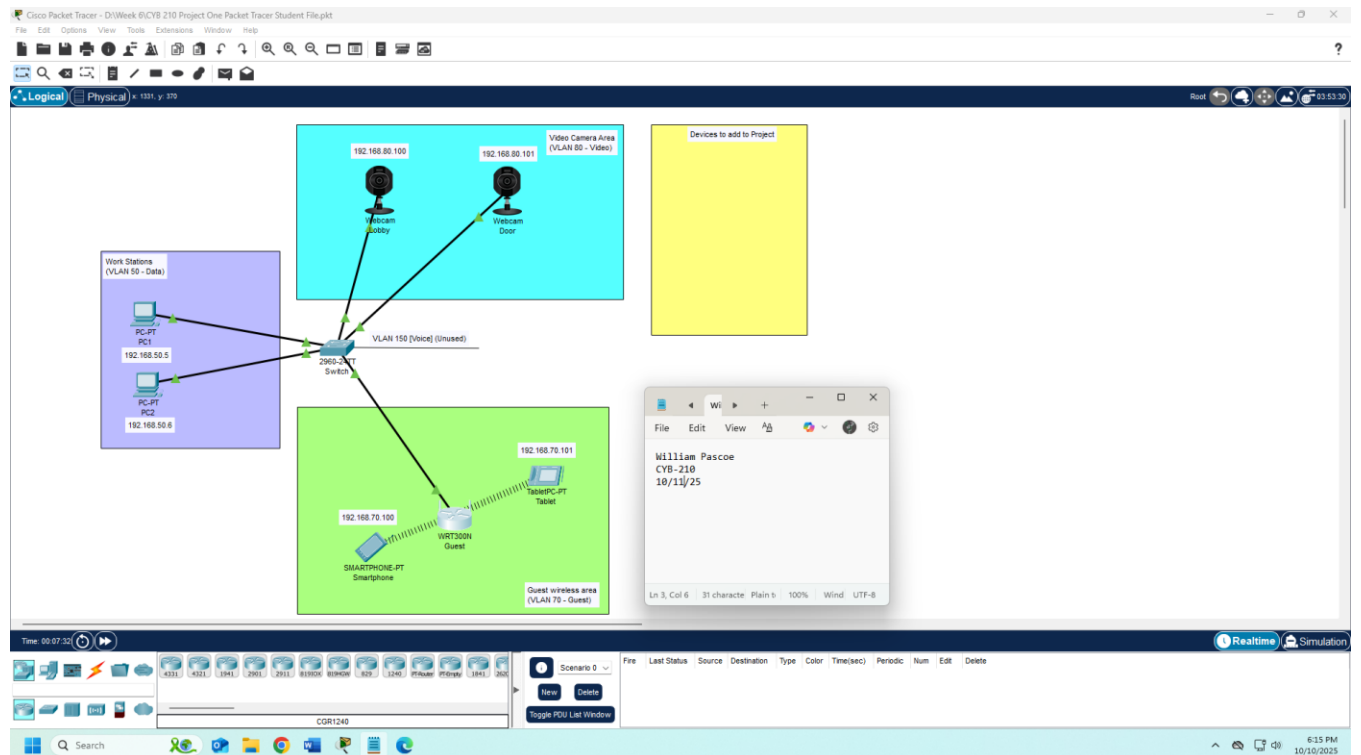
This screenshot shows the DHCP configuration interface for a WRT300N Guest router in Cisco Packet Tracer. The network diagram in the background illustrates a multi-VLAN setup:

- Work Stations (VLAN 55 - Data):** Contains two PCs (PC1: 192.168.50.5, PC2: 192.168.50.6) connected to a 2960-24TT Switch.
- Video Camera Area (VLAN 80 - Video):** Contains two Webcam Door devices (192.168.80.100, 192.168.80.101) connected to the same switch.
- Guest wireless area (VLAN 70 - Guest):** Contains a WRT300N Guest router connected to the switch, with a SmartPhone-PT and a TabletPC-PT nearby.

The DHCP configuration window is open, showing the following settings:

- Internet Setup:** Automatic Configuration - DHCP.
- Optional Settings:** Host Name: William Pascoe, CYB-210, 10/11/25.
- Network Setup:** Router IP: 192.168.70.1, Subnet Mask: 255.255.255.0.
- DHCP Server Settings:** DHCP Server: ☒ Enabled. Start IP Address: 192.168.70.100, Maximum number of Users: 70, IP Address Range: 192.168.70.100 - 169.

## Network Diagram



This screenshot shows the network diagram in Cisco Packet Tracer, displaying the same multi-VLAN setup as the DHCP setup window. The diagram includes:

- Work Stations (VLAN 55 - Data):** Two PCs (PC1: 192.168.50.5, PC2: 192.168.50.6) connected to a 2960-24TT Switch.
- Video Camera Area (VLAN 80 - Video):** Two Webcam Door devices (192.168.80.100, 192.168.80.101) connected to the same switch.
- Guest wireless area (VLAN 70 - Guest):** A WRT300N Guest router connected to the switch, with a SmartPhone-PT and a TabletPC-PT nearby.

The interface also shows a 'Devices to add to Project' panel and a 'Realtime Simulation' status bar at the bottom.

# Ping Tests

The network diagram shows a central 2960-24TT switch connected to three VLANs:

- VLAN 50 (Data):** Contains two PCs (PC1 and PC2) with IP addresses 192.168.50.5 and 192.168.50.6.
- VLAN 70 (Guest):** Contains a SMARTPHONE-PT and a TabletPC-PT, both with IP address 192.168.70.101.
- VLAN 80 (Video):** Contains two IP cameras (Webcam Lobby and Webcam Door) with IP addresses 192.168.80.100 and 192.168.80.101.

A text box in the center of the diagram reads: William Pascoe, CYB-218, 10/11/25.

The Command Prompt window shows the following output:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.80.100

Pinging 192.168.80.100 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.80.100:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.70.100

Pinging 192.168.70.100 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.70.100:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 192.168.50.6

Pinging 192.168.50.6 with 32 bytes of data:

Reply from 192.168.50.6: bytes=32 time=1ms TTL=128
Reply from 192.168.50.6: bytes=32 time=1ms TTL=128
Reply from 192.168.50.6: bytes=32 time=1ms TTL=128
Reply from 192.168.50.6: bytes=32 time=1ms TTL=128

Ping statistics for 192.168.50.6:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```