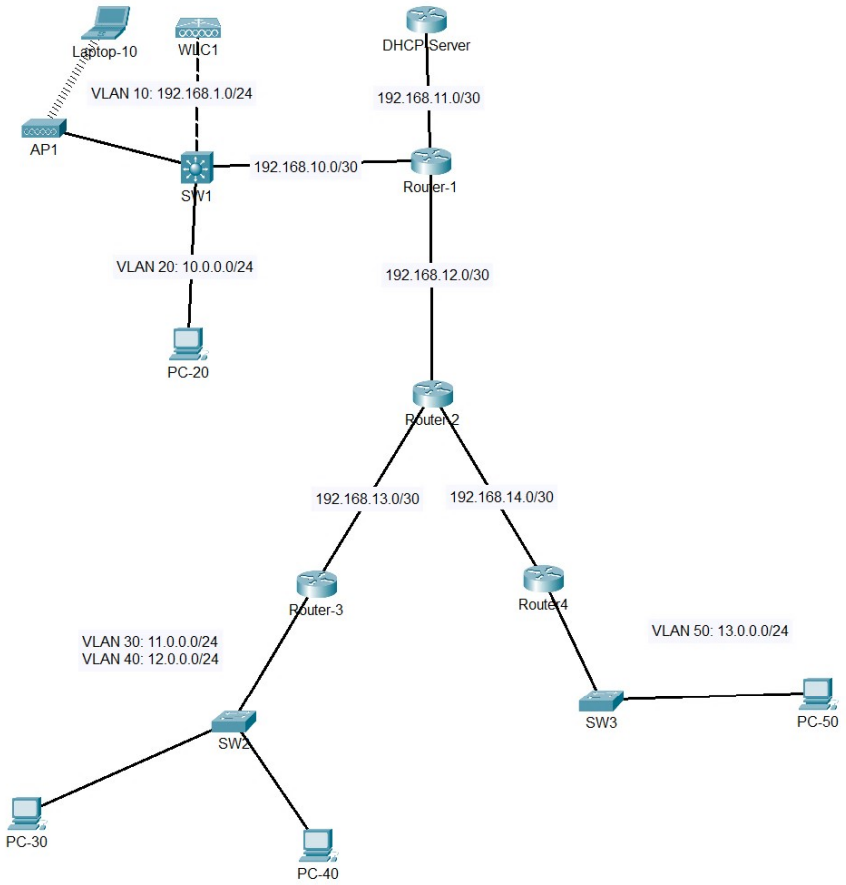
Wireless Network

Objective: My goal for this virtual lab was to set up a wireless subnet within a network. I am limited on Cisco Packet Tracer so I could only configure 1 subnet as a wireless LAN and the other 4 subnets as wired LANs. For the WLAN I configured the WLC with a static IP route and the access point with a static route as well. I implemented a DHCP to simulate real world IP addressing scheme.

Equipment: WLC-3504, LAP-PT, Cisco 3560, (5) Cisco 2811, (2) Cisco 2960, (4) PC's, and Laptop

Key Steps:

a. Create a DHCP Server for networks (192.168.1.0/24, 10.0.0.0/24, 11.0.0.0/24, 12.0.0.0/24, and 13.0.0.0/24)
b. VLAN 10 (192.168.1.0/24) VLAN 20 (10.0.0.0/24) VLAN 30 (11.0.0.0/24) VLAN 40 (12.0.0.0/24) VLAN 50 (13.0.0.0/24)
c. exclude .1, .2 and .254 for 192.168.1.0/24 and the rest of the networks just exclude .254
d. Assign 192.168.1.1 to the WLC and 192.168.1.2 to LAP
e. for the layer 3 (SW1) switch assign an SVI to VLAN 10 and VLAN 20 with .254
f. Use OSPF area 0 to advertise each network
g. On router 3 use ROAS and a trunk link to tag traffic from VLAN 30 and VLAN 40

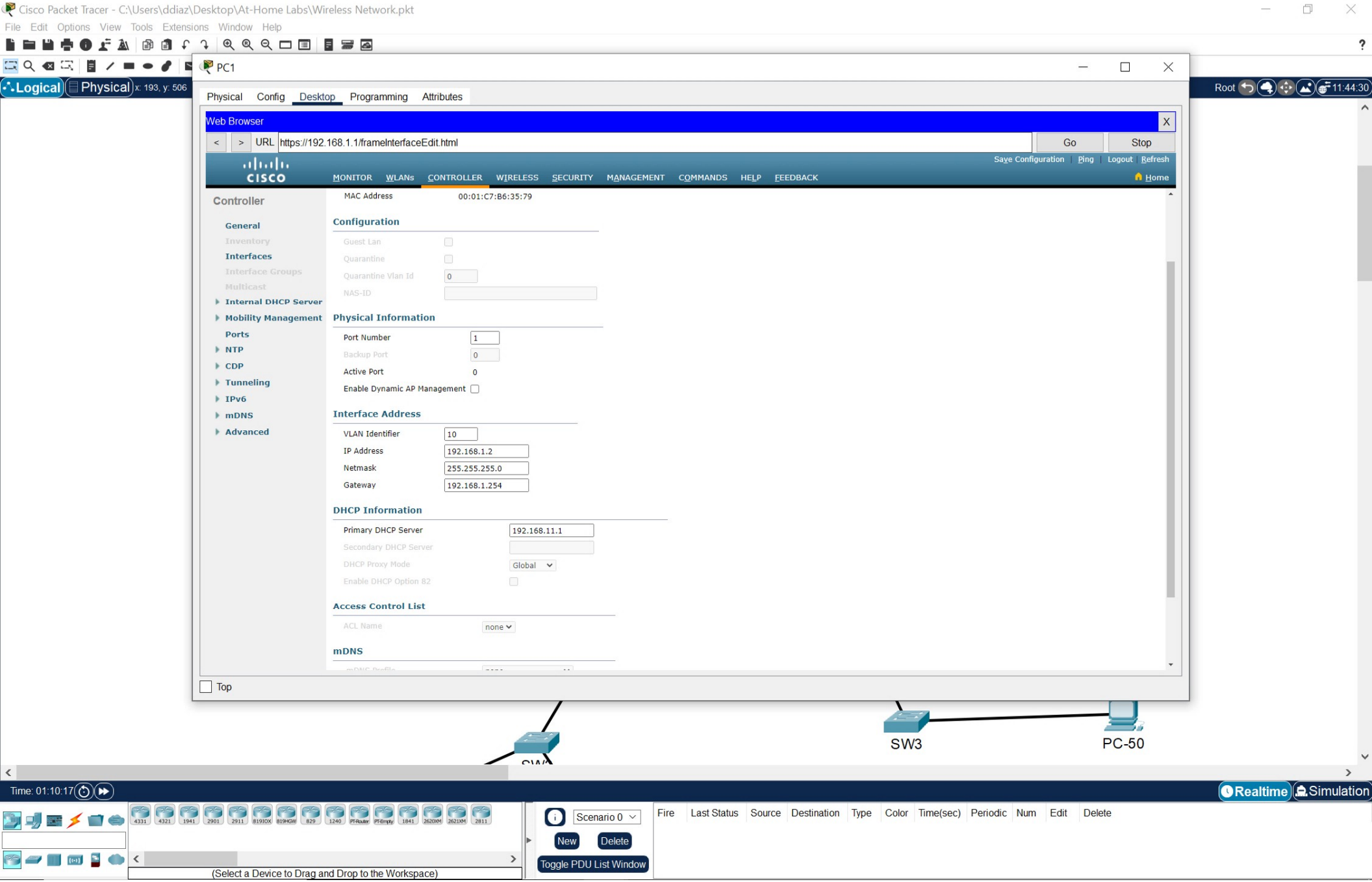

Laptop-10
WLC1
DHCP Server
VLAN 10: 192.168.1.0/24
192.168.11.0/30
AP1
192.168.10.0/30
Router-1
SW1
VLAN 20: 10.0.0.0/24
192.168.12.0/30
PC-20
Router-2
192.168.13.0/30
192.168.14.0/30
Router-3
Router-4
VLAN 30: 11.0.0.0/24
VLAN 40: 12.0.0.0/24
VLAN 50: 13.0.0.0/24
SW2
SW3
PC-50
PC-30
PC-40

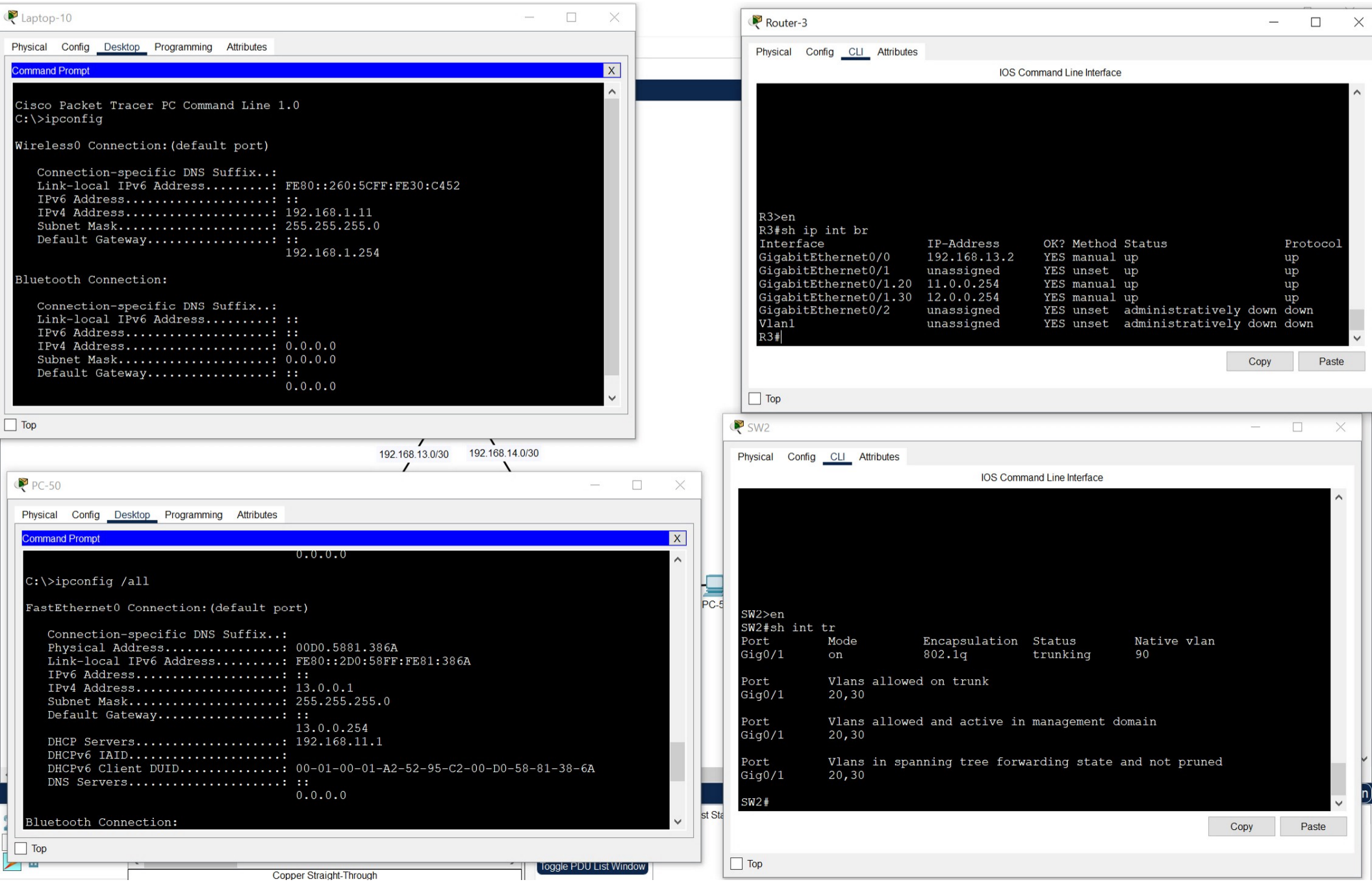
Wireless Network

SW1	G1/0/1	WLC	Gig1
SW1	G1/0/2	AP-1 (VLAN10)	Gig0
SW1	G1/0/3	Router-1	G0/0
SW1	G1/0/4-24	VLAN 20	F0/1
SW1	G1/0/4	PC-20	F0
WLC	Gig1	SW1	G1/0/1
AP-1 (VLAN 10)	Gig0	SW1	G1/0/2
Router-1	G0/0	SW1	G1/0/3
Router-1	G0/1	DHCP-Server	G0/0
Router-1	G0/2	Router-2	G0/1
DHCP-Server	G0/0	Router-1	G0/1
Router-2	G0/1	Router-1	G0/2
Router-2	G0/0	Router-3	G0/0
Router-2	G0/2	Router-4	G0/0
Router-3	G0/0	Router-2	G0/0
Router-3	G0/1	SW2	G0/1
SW2	G0/1	Router-3	G0/1
SW2	F0/1-12	VLAN 30	
SW2	F0/13-24	VLAN 40	
SW2	F0/1	PC-30	F0
SW2	F0/13	PC-40	F0
Router-4	G0/0	Router-2	G0/2
Router-4	G0/1	SW3	G0/1
SW3	G0/1	Router-4	G0/1
SW3	F01-24	VLAN 50	F0/1
SW3	F0/1	PC-50	F0

Wireless Network (IP Addresses)

WLC	G1/0/1	192.168.1.1/24
AP-1	G1/0/2	192.168.1.2/24
Laptop-10	WLAN 10 (DHCP)	192.168.1.11/24
SW1	SVI VLAN 10	192.168.1.254/24
SW1	SVI VLAN 20	10.0.0.254/24
SW1	G1/0/3	192.168.10.1/30
Router-1	G0/0	192.168.10.2/30
Router-1	G0/1	192.168.11.2/30
Router-1	G0/2	192.168.12.1/30
DHCP Server	G0/0	192.168.11.1/30
Router-2	G0/1	192.168.12.2/30
Router-2	G0/0	192.168.13.1/30
Router-2	G0/2	192.168.14.1/30
Router-3	G0/0	192.168.13.2/30
Router-3	G0/1.20	11.0.0.254.24
Router-3	G0/1.30	12.0.0.254/24
PC-30	DHCP	10.0.0.1/24
PC-40	DHCP	11.0.0.1/24
Router-4	G0/0	192.168.14.2/30
Router-4	G0/1	13.0.0.254/24
PC-50	DHCP	13.0.0.1/24


Cisco Packet Tracer - C:\Users\ddiaz\Desktop\At-Home Labs\Wireless Network.pkt
File Edit Options View Tools Extensions Window Help
Logical Physical x: 193, y: 506
Root 11:44:30
PC1
Physical Config Desktop Programming Attributes
Web Browser
URL https://192.168.1.1/frameInterfaceEdit.html
Go Stop
Save Configuration | Ping | Logout | Refresh
MONITOR WLANs CONTROLLER WIRELESS SECURITY MANAGEMENT COMMANDS HELP FEEDBACK
Home
Controller
General
Inventory
Interfaces
Interface Groups
Multicast
Internal DHCP Server
Mobility Management
Ports
NTP
CDP
Tunneling
IPv6
mDNS
Advanced
MAC Address 00:01:C7:B6:35:79
Configuration
Guest Lan
Quarantine
Quarantine Vlan Id 0
NAS-ID
Physical Information
Port Number 1
Backup Port 0
Active Port 0
Enable Dynamic AP Management
Interface Address
VLAN Identifier 10
IP Address 192.168.1.2
Netmask 255.255.255.0
Gateway 192.168.1.254
DHCP Information
Primary DHCP Server 192.168.11.1
Secondary DHCP Server
DHCP Proxy Mode Global
Enable DHCP Option 82
Access Control List
ACL Name none
mDNS
Top
SW3
PC-50
Time: 01:10:17
Realtime Simulation
(Select a Device to Drag and Drop to the Workspace)
Scenario 0
New Delete
Toggle PDU List Window
Fire Last Status Source Destination Type Color Time(sec) Periodic Num Edit Delete


Laptop-10
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ipconfig
Wireless0 Connection:(default port)
Connection-specific DNS Suffix..:
Link-local IPv6 Address.....: FE80::260:5CFF:FE30:C452
IPv6 Address.....: ::
IPv4 Address.....: 192.168.1.11
Subnet Mask.....: 255.255.255.0
Default Gateway.....: ::
192.168.1.254
Bluetooth Connection:
Connection-specific DNS Suffix..:
Link-local IPv6 Address.....: ::
IPv6 Address.....: ::
IPv4 Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway.....: ::
0.0.0.0
Top
Router-3
Physical Config CLI Attributes
IOS Command Line Interface
R3>en
R3#sh ip int br
Interface IP-Address OK? Method Status Protocol
GigabitEthernet0/0 192.168.13.2 YES manual up up
GigabitEthernet0/1 unassigned YES unset up up
GigabitEthernet0/1.20 11.0.0.254 YES manual up up
GigabitEthernet0/1.30 12.0.0.254 YES manual up up
GigabitEthernet0/2 unassigned YES unset administratively down down
Vlan1 unassigned YES unset administratively down down
R3#
Copy
Paste
Top
192.168.13.0/30
192.168.14.0/30
PC-50
Physical Config Desktop Programming Attributes
Command Prompt
0.0.0.0
C:\>ipconfig /all
FastEthernet0 Connection:(default port)
Connection-specific DNS Suffix..:
Physical Address.....: 00D0.5881.386A
Link-local IPv6 Address.....: FE80::2D0:58FF:FE81:386A
IPv6 Address.....: ::
IPv4 Address.....: 13.0.0.1
Subnet Mask.....: 255.255.255.0
Default Gateway.....: ::
13.0.0.254
DHCP Servers.....: 192.168.11.1
DHCPv6 IAID.....:
DHCPv6 Client DUID.....: 00-01-00-01-A2-52-95-C2-00-D0-58-81-38-6A
DNS Servers.....: ::
0.0.0.0
Bluetooth Connection:
Top
SW2
Physical Config CLI Attributes
IOS Command Line Interface
SW2>en
SW2#sh int tr
Port Mode Encapsulation Status Native vlan
Gig0/1 on 802.1q trunking 90
Port Vlans allowed on trunk
Gig0/1 20,30
Port Vlans allowed and active in management domain
Gig0/1 20,30
Port Vlans in spanning tree forwarding state and not pruned
Gig0/1 20,30
SW2#
Copy
Paste
Top
PC-5
Toggle PDU List Window
Copper Straight-Through