Design IP address plan

The network address 172.30.0.0/16 is given.

- VLAN 10 (students) is having 250 users
- VLAN 20 (staff) is having 60 users
- VLAN 30 (guests) is having 58 users
- WAN1 is having 2 users
- WAN2 has 2 users

VLAN 10 (STUDENTS)

Subnet address	First usable address	Last usable address	Subnet mask
172.30.0.0	172.30.0.1	172.30.0.254	255.255.255.0

VLAN 20 (STAFF)

Subnet address	First usable address	Last usable address	Subnet mask
172.30.1.0	172.30.1.1	172.30.1.62	255.255.255.192

VLAN 30 (GUEST)

Subnet address	First usable address	Last usable address	Subnet mask
172.30.1.64	172.30.1.65	172.30.1.126	255.255.255.192

WAN1

Subnet address	First usable address	Second usable address	Subnet mask
172.30.1.128	172.30.1.129	172.30.1.130	255.255.255.252

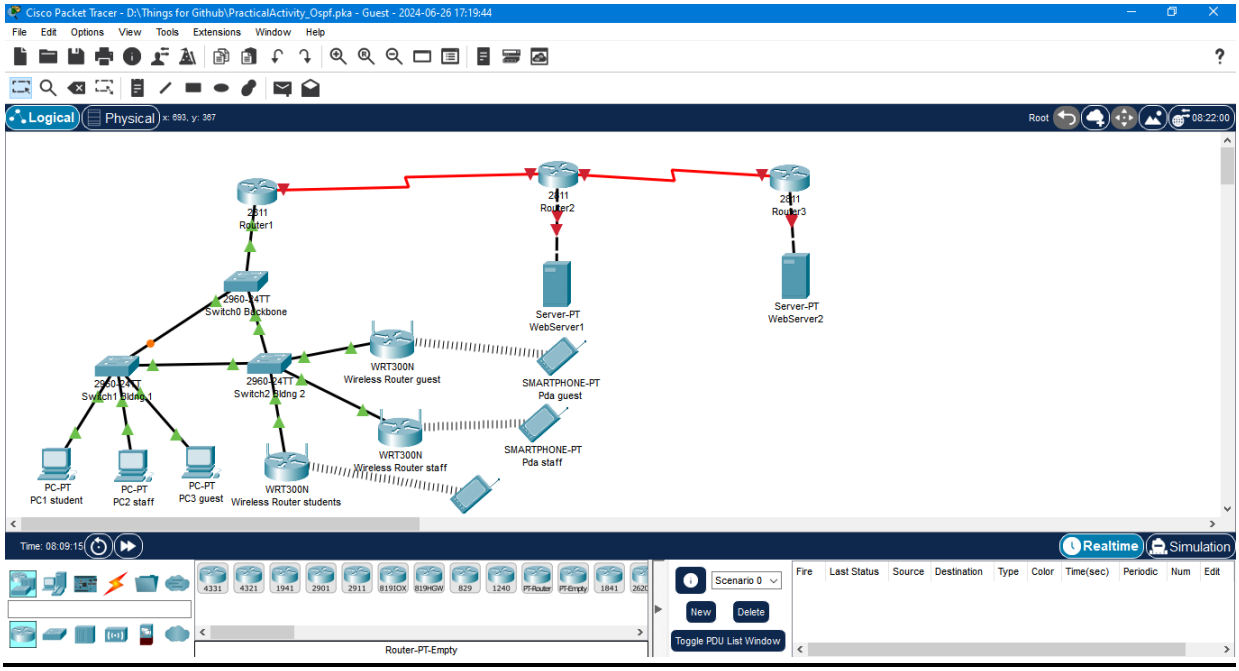
WAN2

Subnet address	First usable address	Second usable address	Subnet mask
172.30.1.132	172.30.1.133	172.30.1.134	255.255.255.252

DEVICE	**INTERFACE**	**IP ADDRESS**	**SUBNET MASK**	**DEFAULT GATEWAY**
Router1	Fa0/0.10	172.30.0.1	255.255.255.0	N/A
	Fa0/0.20	172.30.1.1	255.255.255.192	N/A
	S0/0/0	172.30.1.129	255.255.255.252	N/A
Router 2	Fa0/0	200.50.5.1	255.255.255.224	N/A
	S0/0/0	172.30.1.130	255.255.255.252	N/A
	S0/0/1	172.30.1.133	255.255.255.252	N/A

Router 3	Fa0/0	120.100.10.1	255.255.255.224	N/A
	S0/0/1	172.30.1.134	255.255.255.252	N/A
Wireless Router student	NIC	172.30.0.254	255.255.255.0	N/A
Wireless Router staff	NIC	172.30.1.62	255.255.255.192	N/A
Wireless Router guest	NIC	172.30.1.126	255.255.255.192	N/A
PC1 (student)	NIC	172.30.0.2	255.255.255.0	172.30.0.1
PC2 (staff)	NIC	172.30.1.2	255.255.255.192	172.30.1.1
PC3 (guest)	NIC	172.30.1.66	255.255.255.192	172.30.1.65
PDA (student)	NIC	172.30.0.3	255.255.255.0	172.30.0.1
PDA (staff)	NIC	172.30.1.3	255.255.255.192	172.30.1.1
PDA (guest)	NIC	172.30.1.67	255.255.255.192	172.30.1.65
Web Server1	NIC	200.50.5.2	255.255.255.224	200.50.5.1
WebServer2	NIC	120.100.10.2	255.255.255.224	120.100.10.1

The Topology



1.Configuring the wireless Security

- On the Wireless Router student, the WEP security is set to aaaaaa1111
- On the Wireless Router staff, the WEP security is set to aaaaaa2222
- On the Wireless Router guest, the WEP security is set to aaaaaa3333

- On the PDA student, the WEP security is set to aaaaaa1111.
- On the PDA student, the WEP security is set to aaaaaa2222.
- On the PDA student, the WEP security is set to aaaaaa3333.

2.Configuring VTP on all switches

- On Backbone switch, the VTP mode is set to Server, the domain is set to cob, and the password is set to cob311t.
- On Building 1 switch, the VTP mode is set to Client, the domain is set to cob, and the password is set to cob311t.
- On Building 2 switch, the VTP mode is set to Client, the domain is set to cob, and the password is set to cob311t.

3. Creating VLANs to separate students, staff and guests on Backbone switch

- VLANs 10, 20, 30, and 99 is created, Named students, staff, guest, and management respectively.

4.Assign ports to VLANs that you created on all switches

- Students VLAN 10 will use ports FastEthernet0/1 to FastEthernet0/5. The port is set to access mode
- Staff VLAN 20 will use ports FastEthernet0/6 to FastEthernet0/10 The port is set to access mode
- Guests VLAN 30 will use ports FastEthernet0/11 to FastEthernet0/15. The port is set to access mode
- Management VLAN 99 will use ports FastEthernet0/16 to FastEthernet0/20. The port is set to trunk mode

5. Connecting VLANs together

- the interface Fa0/0 is enabled on router 1
- Subinterface Fa0/0.10 is assigned to vlan10 172.30.0.1 + 255.255.255.0
- Subinterface Fa0/0.20 is assigned to vlan20 172.30.1.1 + 255.255.255.192

6.Assigning IP addresses manually on all end devices

The end devices are configured like:

- Wireless Router student :172.30.0.254 + 255.255.255.0
- Wireless Router staff :172.30.1.62 + 255.255.255.192
- Wireless Router guest : 172.30.1.126 + 255.255.255.192
- PC1 (student) : 172.30.0.2 + 255.255.255.0 + 172.30.0.1
- PC2 (staff) : 172.30.1.2 + 255.255.255.192 + 172.30.1.1
- PC3 (guest) : 172.30.1.66 + 255.255.255.192 + 172.30.1.65
- PDA (student) : 172.30.0.3 + 255.255.255.0 +172.30.0.1
- PDA (staff) : 172.30.1.3 + 255.255.255.192 + 172.30.1.1
- PDA (guest) : 172.30.1.67 + 255.255.255.192 + 172.30.1.65
- Web Server1 : 200.50.5.2 + 255.255.255.224 + 200.50.5.1
- WebServer2 : 120.100.10.2 + 255.255.255.224 +120.100.10.1

7. Configuring dynamic routing

The following commands were used:

- Router ospf 1
- Network ip address + wildcard (for all routers)

8. Configure router interfaces on router1 and router2

- On router1, interface configured to S0/0/0 with 172.30.1.129 mask 255.255.255.252.
- On router2, interface configured to S0/0/0 with 172.30.1.130 mask 255.255.255.252.
- On router2, interface configured to S0/0/1 with 172.30.1.133 mask 255.255.255.252
- On router2, interface configured to Fa0/0 with IP address – 200.50.5.1 mask 255.255.255.224.
- On router3, interface configured to S0/0/1 with 172.30.1.134 mask 255.255.255.252.
- On router3, interface configured to Fa0/0 with IP address – 120.100.10.1 mask 255.255.255.224