VLSM

Given Network: 192.168.0.0/24
Teacher LAN = VLAN 10 = 55 hosts --> 2^6 / 26
Student LAN = VLAN 20 = 110 Hosts --> 2^7 /25

192.168.0.|[24] 0|[25]0000000 = 192.168.0.0/25 -> 1st Subnet -> assign Student

192.168.0.|[24] 1|[25]0000000 = further subnet this second subnet

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192.168.0. 1|[25]0|[26]000000 = 192.168.0.128/26 -> 1st Subnet -> assign Teacher

192.168.0. 1|[25]1|[26]000000 = 192.168.0.192/26 -> 2nd Subnet

Student LAN Network: 192.168.0.0/25

Broadcast Address: 192.168.0.0|[25]0000000

192.168.0.0|[25]1111111 = 192.168.0.127

Last Usable IP /Default Gateway: 192.168.0.126

Subnet Mask: 11111111 11111111 11111111 10000000 = 255.255.255.128

Teacher LAN Network: 192.168.0.128/26

Broadcast Address: 192.168.0. 10|[26]000000

192.168.0. 10|[26]111111 = 192.168.0.191

Last Usable IP /Default Gateway: 192.168.0.190

Subnet Mask: 11111111 11111111 11111111 11000000 = 255.255.255.192

Configuration

VLAN+VTP

```
Switch>en
Switch#conf
Switch(config)#hostname Core
Core(config)#vlan 10
Core(config-vlan)#name Teacher
Core(config-vlan)#exit
Core(config)#vlan 20
Core(config-vlan)#name Student
Core(config-vlan)#exit

Core(config)#vtp mode server
Core(config)#vtp domain AIUB
Core(config)#vtp password ciscoaiub
```

```
Core(config)#int range f0/1-3
Core(config-if-range)#switchport mode trunk

Core(config-if-range)#exit


Switch(config)#hostname Access1
Access1(config)#vtp mode client
Access1(config)#vtp domain AIUB
Access1(config)#vtp password ciscoaiub

Access1(config)#int f0/1
Access1(config-if)#switchport mode trunk

Access1(config-if)#exit

Switch(config)#hostname Access2
Access2(config)#vtp mode client
Access2(config)#vtp domain AIUB
Access2(config)#vtp password ciscoaiub

Access2(config)#int f0/1
Access2(config-if)#switchport mode trunk

Access2(config-if)#exit
```

VLAN Assign

```
Access1(config)#int range f0/2-3
Access1(config-if-range)#switchport mode access
Access1(config-if-range)#switchport access vlan 10
Access1(config-if-range)#exit

Access1(config)#int f0/4
Access1(config-if)#switchport mode access
Access1(config-if)#switchport access vlan 20
Access1(config-if)#exit

Access2(config)#int f0/2
Access2(config-if)#switchport mode access
Access2(config-if)#switchport access vlan 10
Access2(config-if)#ex

Access2(config)#int range f0/3-4
Access2(config-if-range)#switchport mode access
Access2(config-if-range)#switchport access vlan 20
Access2(config-if-range)#ex
```

InterVLAN Routing

```
Router(config)#hostname AIUB
AIUB(config)#int f0/0
AIUB(config-if)#no shutdown
AIUB(config-if)#exit

AIUB(config)#int f0/0.1
AIUB(config-subif)#encapsulation dot1Q 10
AIUB(config-subif)#ip address 192.168.0.190 255.255.255.192
AIUB(config-subif)#exit

AIUB(config)#int f0/0.2
AIUB(config-subif)#encapsulation dot1Q 20
AIUB(config-subif)#ip address 192.168.0.126 255.255.255.128
AIUB(config-subif)#exit

AIUB#copy running-config startup-config
```

Router Interface Configuration

```
Router>en
Router#conf t
Router(config)#hostname Router0
Router0(config)#int f0/0
Router0(config-if)#ip address 172.16.1.254 255.255.255.0
Router0(config-if)#no shutdown

Router0(config-if)#exit
Router0(config)#int s0/1/0
Router0(config-if)#ip add 172.16.10.2 255.255.255.252
Router0(config-if)#no shutdown
Router0(config-if)#exit
```

OSPF

```
AIUB(config)#do sh ip route connected
AIUB(config)#router ospf 110
AIUB(config-router)#network 172.16.10.0 0.0.0.3 area 0
AIUB(config-router)#network 192.168.0.0 0.0.0.127 area 0
AIUB(config-router)#network 192.168.0.128 0.0.0.63 area 0

AIUB(config-router)#exit


Router0(config)#router ospf 110
Router0(config-router)#network 172.16.1.0 0.0.0.255 area 0
Router0(config-router)#network 172.16.10.0 0.0.0.3 area 0
Router0(config-router)#exit
```