VLAN & Trunking w/ DHCP

```
Create VLANs:
Switch# configure terminal
Switch(config)# vlan 10
Switch(config-vlan)# name Sales
Switch(config-vlan)# exit
Switch(config)# vlan 20
Switch(config-vlan)# name HR
Switch(config-vlan)# exit

Assign Access Ports to VLANs:
On Switch 1:
Switch(config)# interface range fastEthernet 0/1-10
Switch(config-if-range)# switchport mode access
Switch(config-if-range)# switchport access vlan 10
Switch(config-if-range)# exit

Switch(config)# interface range fastEthernet 0/11-20
Switch(config-if-range)# switchport mode access
Switch(config-if-range)# switchport access vlan 20
Switch(config-if-range)# exit

On Switch 2 (similar configuration for access ports on Switch 2):
Switch(config)# interface range fastEthernet 0/1-10
Switch(config-if-range)# switchport mode access
Switch(config-if-range)# switchport access vlan 10
Switch(config-if-range)# exit

Switch(config)# interface range fastEthernet 0/11-20
Switch(config-if-range)# switchport mode access
Switch(config-if-range)# switchport access vlan 20
Switch(config-if-range)# exit

Trunk Between Switch 1 and Switch 2

On Switch 1 (assuming fastEthernet 0/24 connects to Switch 2):
Switch(config)# interface fastEthernet 0/24
Switch(config-if)# switchport mode trunk
Switch(config-if)# switchport trunk allowed vlan 10,20
Switch(config-if)# exit
```

On Switch 2 (assuming fastEthernet 0/24 connects to Switch 1):

```
Switch(config)# interface fastEthernet 0/24
Switch(config-if)# switchport mode trunk
Switch(config-if)# switchport trunk allowed vlan 10,20
Switch(config-if)# exit
```

Trunk Between Router and Switch 1

On Switch 1 (assuming gigabitethernet 0/1 connects to the router's gigabitEthernet 0/0):

```
Switch(config)# interface gigabitethernet 0/1
Switch(config-if)# switchport mode trunk
Switch(config-if)# switchport trunk allowed vlan 10,20
Switch(config-if)# exit
```

Enable Sub-Interfaces on gigabitEthernet 0/0 for Each VLAN:

This sets up sub-interfaces for VLAN 10 and VLAN 20 with IP addresses for each subnet.

```
Router> enable
Router# configure terminal
Router(config)# interface gigabitEthernet 0/0
Router(config-if)# no shutdown
Router(config-if)# exit

Router(config)# interface gigabitEthernet 0/0.10
Router(config-subif)# encapsulation dot1Q 10
Router(config-subif)# ip address 192.168.10.1 255.255.255.0
Router(config-subif)# exit

Router(config)# interface gigabitEthernet 0/0.20
Router(config-subif)# encapsulation dot1Q 20
Router(config-subif)# ip address 192.168.20.1 255.255.255.0
Router(config-subif)# exit
```

Configure DHCP Pools on the Router:

Set up DHCP pools for each VLAN to provide IP addresses to clients on each subnet.

```
Router(config)# ip dhcp pool Sales
Router(dhcp-config)# network 192.168.10.0 255.255.255.0
Router(dhcp-config)# default-router 192.168.10.1
Router(dhcp-config)# dns-server 1.1.1.1 / 8.8.8.8
```

```
Router(dhcp-config)# exit

Router(config)# ip dhcp pool Marketing
Router(dhcp-config)# network 192.168.20.0 255.255.255.0
Router(dhcp-config)# default-router 192.168.20.1
Router(dhcp-config)# dns-server 1.1.1.1 / 8.8.8.8
Router(dhcp-config)# exit
```

Exclude the Router’s IP Addresses from the DHCP Pool:

```
Router(config)# ip dhcp excluded-address 192.168.10.1
Router(config)# ip dhcp excluded-address 192.168.20.1
```

Verify the Configuration
Verify trunking

```
Switch# show interfaces trunk
```

Verify VLAN assignment

```
Switch# show vlan brief
```

On the Router:

- Verify sub-interface status

```
Router# show ip interface brief
```

Disable Inter-VLAN Routing:

- Run this command to prevent the router from routing traffic between sub-interfaces.

```
Router(config)# no ip routing
```