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Practical Final Revision

Q. DHCP:

* on the routers assign the ip then Sub-Mask:
* no sh: en
  conf t
  int <interface>
  ip addr <ip> <sub>
  no sh
* enable rip:
  conf t
  router rip
  version 2
  network <ip>
  network <ip>
* DHCP on the routers we make ip pool for every network:

Config t
ip dhcp excluded-address <ip> <ip> # if I'll exclude some
ip dhcp pool <name>
network <ip> <sub>
default-router <default gateway> # Do this for every pool
dns-server <DNS>
domain-name <name>

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* on the Router Connected To the network:

Config t

ip helper-address <ip of the Router got Dhcp>

* enable DHCP on each Device.

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(3) Inter-VLANs:

* We have 3 or whatever VLANs on the Switch
* We got Router Connected to the Switch.
* We create native VLAN on the Switch and Enable The Trunk Mode & assign it as native:

```
Conf t                          #on The Switch
Vlan 99
name <native-Vlan>
exit , interface <Switch to Router interface>
Switch Port Mode trunk
Switch Port trunk native Vlan 99
Switch Port trunk allowed Vlan 10,20,30
```

* We create Sub-interface for each VLAN:

```
interface <Router to Switch interface>      #on The Router
 interface 90/0.10      # We created The first Sub-interface
 encapsulation dot1Q 10
 ip address  192.168.10.1  255.255.255.0
  no sh                  # Repeat for each Sub-interface
```

* on each device assign the default gateway as it in its VLAN.

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4- OSPF: (Open Shortest Path First)

OSPFV2 → IPV4

OSPFV3 → IPV6

* We need to Configure the Routers first and assign IPs and Make them up (no sh)

DR → Disignated Router.

BDR → Backup Disignated Router.

Number of Adjacencies = $n(n-1)/2$

Number of Routers = 5

Number of Adjacencies = $5(5-1)/2 = 10$

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oSPF Configurations:

* We have 3 areas Area 0, Area 1, ABR (Area Border Router)

ABR: Area in between to Make Area 0 recognize Area 1

* on the first router:

```
en , Config t
router ospf <PID>
network <networkIP> 0.0.0.255 area 0
2nd net ← network < " " > " " " " " "
passive-interface <int>
```

Repeat for each router and change the area.

on the Main Route Don't do this STEP:

```
passive-interface <int>
```

---

on the Main router to assign its priority higher:

```
Config t
int Gi0/0
ip ospf priority 100
clear ip ospf process
```

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5. Port-Security:

* Secure unused Ports by closing them:

```
Config
int range fo1s_24
Shut down
```

* Mitigate MAC-Address Table Attacks:

```
Config t
interface <int>
Switch Port Mode <Acces OR trunk>
Switch Port Port-Security
end
```

* Limit and Learn MAC Addresses:

Assign Specific MAC:

```
int <int>
Switchport Port-Security Mac-address <MAC>
```

```
Switch Port Port-Security Mac-Address STICKY
```

Saving the current Conf will commit the dynamically learned MAC Address to NVRAM

```
Switchport Port-Security Ma-Address MAX <num>
```

Limit to Specific Mac-Addresses number

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* Aging:

int fa0/1
switchport port-security aging time 10
switchport port-security aging type inactivity

* Violation Modes:

switchport port-security violation sh/restrict/protect

* Mitigate Vlan Hopping:

for the unused interfaces:

int range <range>
switchport mode access
exit
int range <range> unused
switchport mode access
switch port access vlan 1000
exit
int range <range> to close DTP
switchport mode trunk
switchport nonegotiate
switch trunk native vlan 999
end

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* Mitigate DHCP Attacks:

DHCP Snooping:

```
Config t , ip dhcp snooping
interface <int>
ip dhcp snooping trust
exit
interface range <range>
ip dhcp snooping limit rate 6
exit
ip dhcp snoping vlan 5,10,50-52
end
```