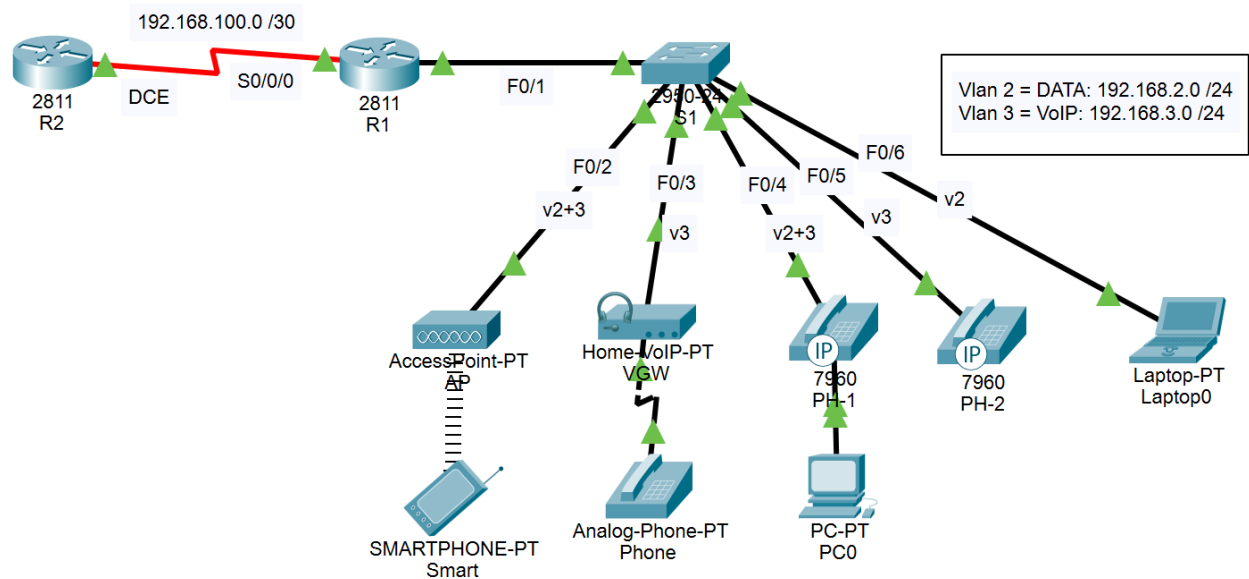


Goal. Recreate the diagram below and configure the following:

1. Hostnames on the routers
2. IP addresses on all router interface except F0/1 on R1
3. R1 as a Router-on-a-Stick (two virtual interfaces for two VLANs)
4. DHCP server on R1 – one DHCP pool for each VLAN
5. Cisco Call Manager on R1
6. Access interfaces on switch S1 according to the diagram
7. Static routes
8. Configure the endpoint devices



1. Hostname

```
Router(config)#hostname R1
```

2. Router IP addresses

```
R2(config)#interface Serial 0/0/0
R2(config-if)#clock rate 4000000
R2(config-if)#ip address 192.168.100.1 255.255.255.252
R2(config-if)#no shut
```

3. Router on a stick on R1

```
R1(config)#interface fastEthernet 0/1
R1(config-if)#no shutdown

R1(config)#interface fastEthernet 0/1.2
R1(config-subif)#encapsulation dot1Q 2
R1(config-subif)#ip address 192.168.2.1 255.255.255.0

R1(config)#interface fastEthernet 0/1.3
R1(config-subif)#encapsulation dot1Q 3
R1(config-subif)#ip address 192.168.3.1 255.255.255.0
```

4. DHCP server on R1

```
R1(config)#ip dhcp excluded-address 192.168.2.0 192.168.2.10
R1(config)#ip dhcp excluded-address 192.168.3.0 192.168.3.10
```

```
R1(config)#ip dhcp pool DATAv2
R1(dhcp-config)#network 192.168.2.0 255.255.255.0
R1(dhcp-config)#default-router 192.168.2.1
```

```
R1(config)#ip dhcp pool VOIPv3
R1(dhcp-config)#network 192.168.3.0 255.255.255.0
R1(dhcp-config)#default-router 192.168.3.1
R1(dhcp-config)#option 150 ip 192.168.3.1
```

** option 150 = tells the VoIP devices the TFTP server address, which is located at Cisco Call Manager (R1)*

5. Cisco Call Manager on R1

```
R1(config)#telephony-service
R1(config-telephony)#max-ephones 4
R1(config-telephony)#max-dn 4
R1(config-telephony)#ip source-address 192.168.3.1 port 2000
R1(config-telephony)#auto assign 1 to 4
```

** auto assign -> giving phone MACs the right to use a phone number*

** 4 = max. number of phones (devices)*

** 4 = max. number of phone numbers*

** ip source-address -> telling the device where to register*

```
R1(config)#ephone-dn 1
R1(config-ephone-dn)#number 101
```

```
R1(config)#ephone-dn 2
R1(config-ephone-dn)#number 102
```

```
R1(config)#ephone-dn 3
R1(config-ephone-dn)#number 103
```

```
R1(config)#ephone-dn 4
R1(config-ephone-dn)#number 104
```

6. Access interfejsi na S1

S1 – R1: trunk interface

```
S1(config-if)#switchport mode trunk
```

v2+3

```
S1(config-if)#switchport mode access
```

```
S1(config-if)#switchport access vlan 2  
S1(config-if)#switchport voice vlan 3
```

v3

```
S1(config-if)#switchport mode access  
S1(config-if)#switchport voice vlan 3
```

v2

```
S1(config-if)#switchport mode access  
S1(config-if)#switchport access vlan 2
```

7. Static routes

```
R2(config)#ip route 0.0.0.0 0.0.0.0 s0/0/0
```

8. Device configuration

Home-VoIP-PT

V-GW -> Config -> Server Address: 192.168.3.1

Laptop, Smart Device, PC

Config -> Settings -> DHCP

Smart Device

- PDA -> Desktop -> Cisco IP Communicator
- In upper right corner, it says “CISCO IP PHONES”;
- Above that there are 4 buttons;
- Click the first button on the left -> Preferences
- Under “TFTP Servers”, select Use these TFTP Servers and enter 192.168.3.1;