



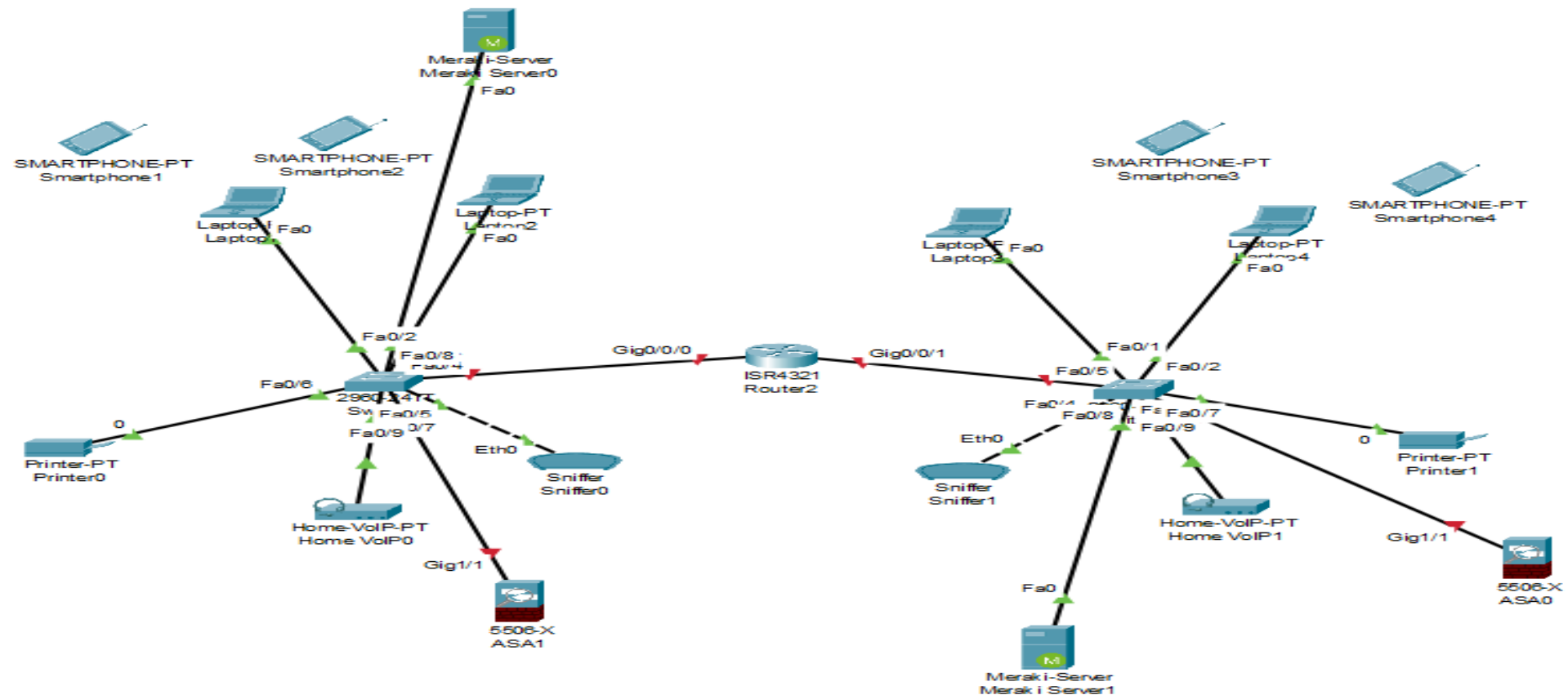
# NETWORKING FUNDAMENTALS CAPSTONE PROJECT

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NAME OF THE COMPANY:  
SET AND GO

# RED DESIGN





# DEVICES FOR 4 EMPLOYEES

- 1 Router ISR4321
- 2 Switches
- 2 printers
- 2 sniffers
- 2 Meraki servers
- 2 home-VoIP PT
- 4 laptops
- 4 smartphones
- 2 Firewalls 5506 X

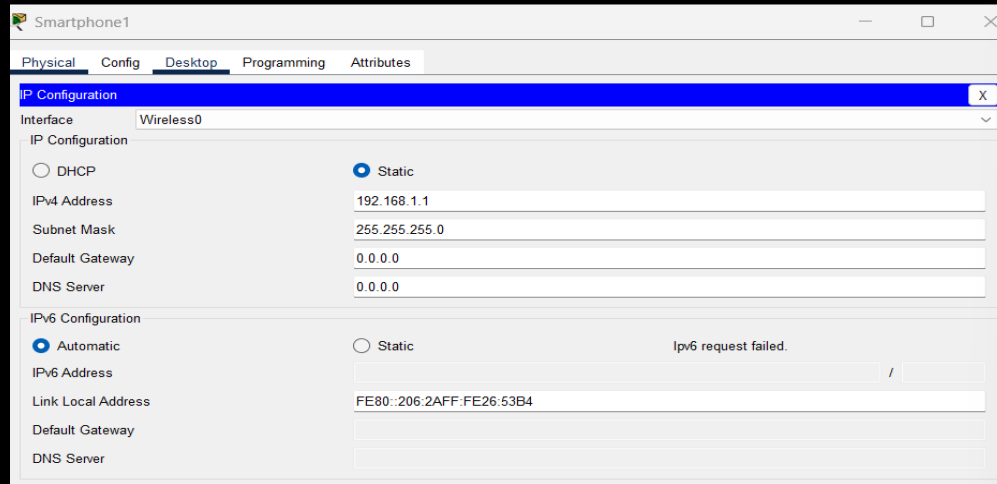
# HOW WILL THE DEVICES CONNECT TO THE LAN

- Wireless
  - 4 smartphones
- Wired
  - 1 Router ISR4321
  - 2 Switches
  - 2 printers
  - 2 sniffers
  - 2 Meraki servers
  - 2 home-VoIP PT
  - 4 laptops
  - 2 Firewalls 5506 X



WHAT WILL BE THE IP ADDRESSING  
SCHEME FOR YOUR INTERNAL NETWORK?

# CONFIGURATION SMARTPHONES



Smartphone1

Physical Config Desktop Programming Attributes

IP Configuration

Interface: Wireless0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 192.168.1.1

Subnet Mask: 255.255.255.0

Default Gateway: 0.0.0.0

DNS Server: 0.0.0.0

IPv6 Configuration

☒ Automatic ☐ Static

IPv6 Address: /

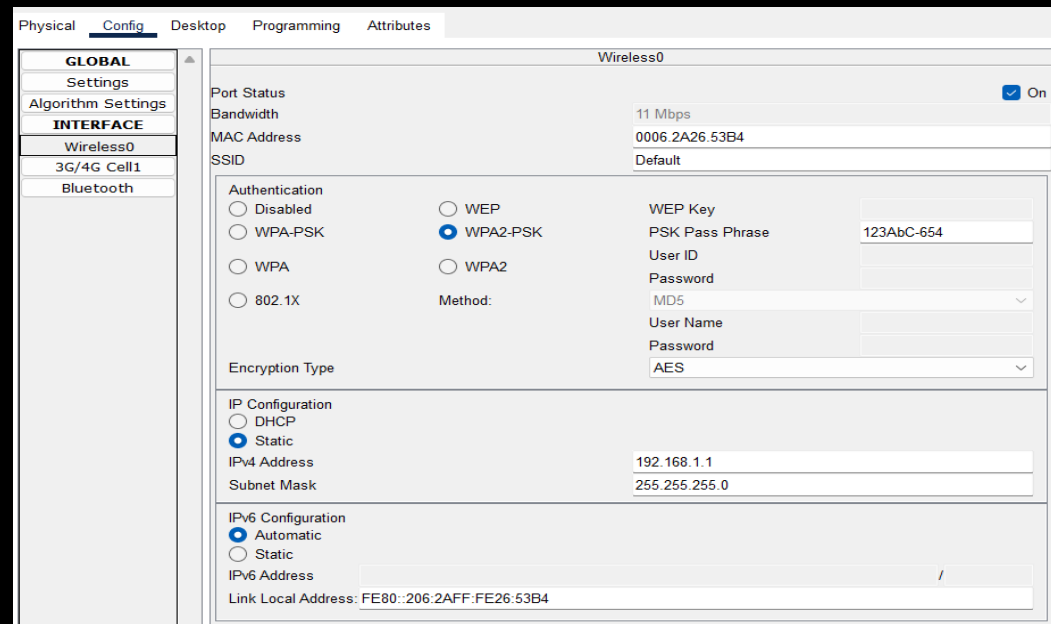
Link Local Address: FE80::206:2AFF:FE26:53B4

Default Gateway:

DNS Server:

IPv6 request failed.

Static and all phones IP Addresses go from 192.168.1.1 – 192.168.1.4



Physical Config Desktop Programming Attributes

GLOBAL

Settings

Algorithm Settings

INTERFACE

Wireless0

3G/4G Cell1

Bluetooth

Wireless0

Port Status: ☒ On

Bandwidth: 11 Mbps

MAC Address: 0006.2A26.53B4

SSID: Default

Authentication

☐ Disabled ☐ WEP ☒ WPA2-PSK ☐ WPA ☐ 802.1X

WEK Key:

PSK Pass Phrase: 123AbC-654

User ID:

Password:

Method: MD5

User Name:

Password:

Encryption Type: AES

IP Configuration

☐ DHCP ☒ Static

IPv4 Address: 192.168.1.1

Subnet Mask: 255.255.255.0

IPv6 Configuration

☒ Automatic ☐ Static

IPv6 Address: /

Link Local Address: FE80::206:2AFF:FE26:53B4

# CONFIGURATION LAPTOPS

- Static configuration all laptops IP goes from 192.168.2.1 – 192.168.2.4

The screenshot shows a configuration window titled 'Laptop1' with tabs for Physical, Config, Desktop, Programming, and Attributes. The 'Config' tab is active, and the 'IP Configuration' section is expanded. The 'Interface' is set to 'FastEthernet0'. Under 'IP Configuration', the 'Static' radio button is selected. The fields are filled with: IPv4 Address: 192.168.2.1, Subnet Mask: 255.255.255.0, Default Gateway: 0.0.0.0, and DNS Server: 0.0.0.0. Under 'IPv6 Configuration', the 'Static' radio button is also selected. The fields are filled with: IPv6 Address: (empty), Link Local Address: FE80::2D0:58FF:FE12:13D5, Default Gateway: (empty), and DNS Server: (empty). At the bottom, the '802.1X' section has 'Use 802.1X Security' unchecked, 'Authentication' set to 'MD5', and 'Username' and 'Password' fields empty.

Section	Option	Value
IP Configuration	Interface	FastEthernet0
	IP Configuration	Static
	IPv4 Address	192.168.2.1
	Subnet Mask	255.255.255.0
IPv6 Configuration	IPv6 Configuration	Static
	IPv6 Address	
	Link Local Address	FE80::2D0:58FF:FE12:13D5
	Default Gateway	
802.1X	Use 802.1X Security	Unchecked
	Authentication	MD5
	Username	
	Password	



# CONFIGURATION ROUTER

- Static configuration all laptops IP goes from 192.168.2.1 – 192.168.2.4

```
Router#enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
%Invalid interface type and number
Router(config)#
Router(config)#
Router(config)#
Router(config)#end
Router#vlan database
% Warning: It is recommended to configure VLAN from config mode,
as VLAN database mode is being deprecated. Please consult user
documentation for configuring VTP/VLAN in config mode.

Router(vlan)#
Router(vlan)#exit
APPLY completed.
Exiting...
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface GigabitEthernet0/0/0
Router(config-if)#ip address 192.168.2.5 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#
```

# CONFIGURATION SWITCH

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname Set&Go01
Set&Go01(config)#vlan 10
Set&Go01(config-vlan)#name Set&Go_01
Set&Go01(config-vlan)#vlan 20
Set&Go01(config-vlan)#name WIRELESS
Set&Go01(config-vlan)#exit
Set&Go01(config)#
```

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#hostname Set&Go01
Set&Go01(config)#vlan 10
Set&Go01(config-vlan)#name Set&Go_01
Set&Go01(config-vlan)#vlan 20
Set&Go01(config-vlan)#name WIRELESS
Set&Go01(config-vlan)#exit
Set&Go01(config)#interface range fastEthernet 0/1-10
Set&Go01(config-if-range)#switchport mode access
Set&Go01(config-if-range)#switchport access vlan 10
Set&Go01(config-if-range)#exit
Set&Go01(config)#interface range fastEthernet 0/10-20
Set&Go01(config-if-range)#switchport mode access
Set&Go01(config-if-range)#switchport access vlan 20
Set&Go01(config-if-range)#exit
Set&Go01(config)#interface fastEthernet 0/1
Set&Go01(config-if)#switchport mode trunk
Set&Go01(config-if)#switchport trunk allowed vlan 10,20
Set&Go01(config-if)#exit
Set&Go01(config)#interface range fastEthernet 0/1-30
interface range not validated - command rejected
Set&Go01(config)#interface range fastEthernet 0/1-20
Set&Go01(config-if-range)#switchport port-security
Set&Go01(config-if-range)#switchport port-security maximum 2
Set&Go01(config-if-range)#switchport port-security violation restrict
Set&Go01(config-if-range)#exit
Set&Go01(config)#end
Set&Go01#write memory
Building configuration...
[OK]
Set&Go01#show vlan brief
```

# CONFIGURATION SWITCH

```
Set&Go01#show vlan brief
```

VLAN	Name	Status	Ports
1	default	active	Fa0/21, Fa0/22, Fa0/23, Fa0/24 Gig0/1, Gig0/2
10	Set&Go_01	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4 Fa0/5, Fa0/6, Fa0/7, Fa0/8 Fa0/9
20	WIRELESS	active	Fa0/10, Fa0/11, Fa0/12, Fa0/13 Fa0/14, Fa0/15, Fa0/16, Fa0/17 Fa0/18, Fa0/19, Fa0/20
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

```
Set&Go01#
```

# CONFIGURATION PRINTERS

```
Set&Go01(config-if)#interface vlan 10
Set&Go01(config-if)#ip address 192.168.10.5 255.255.255.0
Set&Go01(config-if)#no shutdown
Set&Go01(config-if)#exit
Set&Go01(config)#ip default-gateway 192.168.10.1
Set&Go01(config)#end
Set&Go01#write memory
Building configuration...
[OK]
```

# CONFIGURATION HOME VOIP-PT

```
Set&Go01#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Set&Go01(config)#interface FastEthernet0/7
Set&Go01(config-if)#
Set&Go01(config-if)#exit
Set&Go01(config)#interface FastEthernet0/7
Set&Go01(config-if)#vlan 30
Set&Go01(config-vlan)#name Home_VoIP_1
Set&Go01(config-vlan)#exit
Set&Go01(config)#interface fastEthernet 0/7
Set&Go01(config-if)#switchport voice vlan 30
Set&Go01(config-if)#switchport mode access
Set&Go01(config-if)#switchport access vlan 10
Set&Go01(config-if)#end
Set&Go01#write memory
Building configuration...
[OK]
```

# CONFIGURATION MERAKI

Meraki Server0

Physical Config Attributes

**GLOBAL**

Settings

Algorithm Settings

**INTERFACE**

FastEthernet0

Global Settings

Display Name Meraki Server0

Gateway/DNS IPv4

☐ DHCP

☒ Static

Default Gateway 192.168.10.1

DNS Server

Gateway/DNS IPv6

☐ Automatic

☒ Static

Default Gateway

DNS Server

Meraki Server0

Physical Config Attributes

**GLOBAL**

Settings

Algorithm Settings

**INTERFACE**

FastEthernet0

FastEthernet0

Port Status ☒ On

Bandwidth ☐ 100 Mbps ☐ 10 Mbps ☒ Auto

Duplex ☐ Half Duplex ☒ Full Duplex ☒ Auto

MAC Address 0090.0C2B.877E

IP Configuration

☐ DHCP

☒ Static

IPv4 Address 192.168.10.2

Subnet Mask 255.255.255.0

IPv6 Configuration

☐ Automatic

☒ Static

IPv6 Address

Link Local Address: FE80::290:CFF:FE2B:877E



# CONFIGURATION FIREWALL

```
ciscoasa(config)#
ciscoasa(config)#
ciscoasa(config)#interface GigabitEthernet1/1
ciscoasa(config-if)#interface gigabitethernet 1/1
ciscoasa(config-if)#ip address 203.0.113.2 255.255.255.252
ciscoasa(config-if)#security-level 0
ciscoasa(config-if)#nameif outside
ciscoasa(config-if)#no shutdown
ciscoasa(config-if)#
```

```
ciscoasa(config)#interface GigabitEthernet1/2
ciscoasa(config-if)#
ciscoasa(config-if)#exit
ciscoasa(config)#interface GigabitEthernet1/2
ciscoasa(config-if)#interface gigabitethernet 1/2
ciscoasa(config-if)#ip address 192.168.10.1 255.255.255.0
ciscoasa(config-if)#security-level 100
ciscoasa(config-if)#nameif inside
ciscoasa(config-if)#no shutdown

%LINK-5-CHANGED: Interface GigabitEthernet1/2, changed state to down
ciscoasa(config-if)#exit
ciscoasa(config)#
```



# HOW MANY NETWORK SEGMENTS WILL YOU HAVE?

- It has two segments separated by a router one as in the previous case two interns and the other segment for the full-time contracted employees.



# HOW WILL THE COMPANY CONNECT TO THE INTERNET?

- The company will use a router ISR4321 as shown in the red configuration



# WHAT SERVICES WILL YOU NEED TO PROVIDE ON YOUR NETWORK AND HOW WILL THEY BE CONFIGURED?

- The company is quite small so instead of DHCP configuration I opted for Static configuration.
- A Sniffer was added to both sections of the network