Project 1 : SOHO Network

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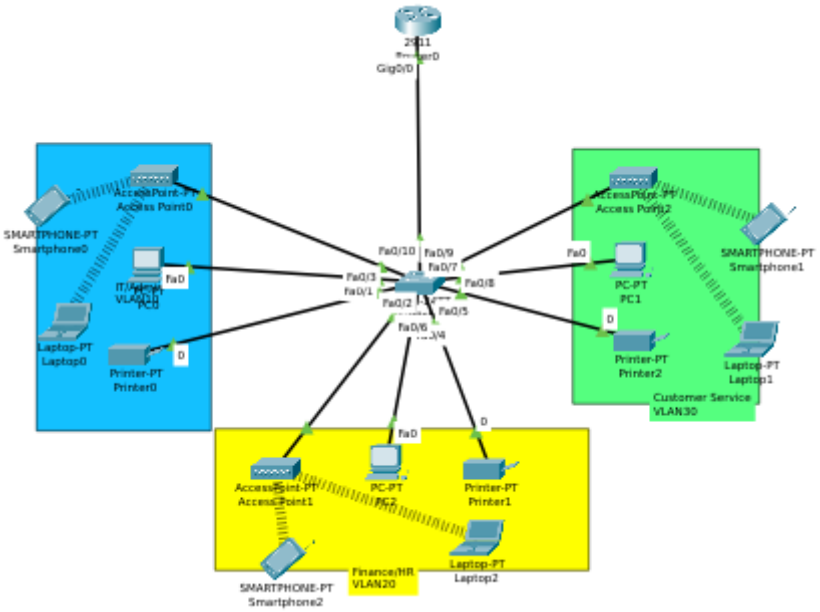


XYZ company is a fast-growing company in Easter Australia with more than 2 milion customers globally. The company deals with selling and buying of food items , which are basically operated from the headquarters. The company is intending to open a branch near the local village Bonalbo , Thus, the company is intending to open a branch near the ocal village Bonalbo, Thus , the company requires young IT graduates to design the network for the branch. The network is intended to operate seperately from HQ network . Being a small network, the company has the following requirements during implementation;

- One router and one switch to be used (All CISCO products)
- 3 departments (Admin/IT , Finance/HR and Customer Service/Reception)
- Each departement is required to be in different VLAN.
- Each department is required to have a wireless network for users
- Host devices in the network are required to obtain IPv4 address automatically.
- Devices in all the departments are required to communicate with each other.

Technologies Implemented :

1. Creating a simple Network using a Router and Access Layer Switch
2. Connecting Networking devices with Correct cabling.
3. Creating VLANS and assigning ports VLAN numbers
4. Subnetting and Ip addressing
5. Configuring Inter-Vlan Routing (Router on a stick)

6. Configuring DHCP Server (Router as the DHCP Server)
7. Configuring WLAN or Wireless network (Cisco Access Point)
8. Host Device Configuration
9. Test and Verifying Network Communication

Final Result :

1. Packt tracer File for the final Project Result
2. Full Documentation of The Process in Github

1. Creating a Simple Network

We going to create a simple network using Router and Access Layer Switch

Basic Switch Configuration

Navigating User Levels

```
enable
```

This will take you to the exec mode

```
configure terminal
```

This will take you to the configuration mode
Let's change the switch name

```
hostname master
```

Enable the password

```
enable secret twargap3
```

Enable the Line Console password

```
line console 0
password <password>
login
```

Enable the Line VTY password

```
line vty 0 15
password <password>
login
```

Exec timout

```
exec-timout 10
```

Logging Synchnrous

```
line console 0
logging synchronous
```

Disabling ip domain

```
no ip domain-lookup
```

Basic Router Configuration

For configuring a router, the basic steps are similar to those for configuring a switch, but there are some differences in commands and configurations. Below is a basic outline for configuring a router:

Navigating User Levels

```
enable
```

This will take you to privileged exec mode.

```
configure terminal
```

This will take you to global configuration mode.

Changing the Router Name

```
hostname router1
```

This command sets the hostname of the router to "router1". Replace "router1" with your desired hostname.

Setting Enable Secret Password

```
enable secret twargap3
```

This command sets the enable secret password to "twargap3". Replace "twargap3" with your desired enable secret password.

Setting Console Line Password

```
line console 0
password your_console_password
login
```

Replace "your_console_password" with your desired console line password.

Setting VTY Line Password

```
line vty 0 15
password your_vty_password
login
```

Replace "your_vty_password" with your desired VTY line password.

Setting Executive Timeout

```
exec-timeout 10
```

This command sets the executive timeout to 10 minutes.

Synchronous Logging for Console Line

```
line console 0
logging synchronous
```

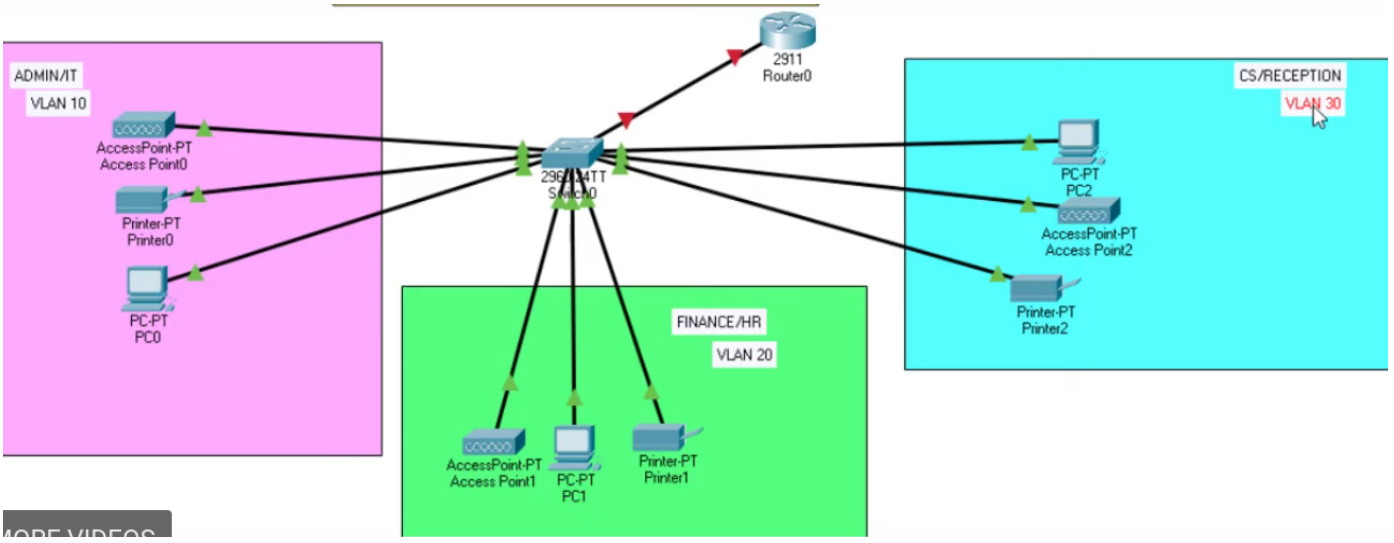
This command enables synchronous logging for the console line.

Disabling IP Domain Lookup

```
no ip domain-lookup
```

This command disables DNS domain lookup.

2. Connecting Networking devices with Correct cabling.



We used : he cable used to connect a switch to an end device like a computer is an "Ethernet cable."

3. Creating VLANS and assigning ports VLAN numbers

VLAN Configuration for Networking Project

Network Topology

- 3 departments:

- IT Department
- Finance / HR Department
- Customer Services Department

VLANs

- VLAN 10: IT Department
- VLAN 20: Finance / HR Department
- VLAN 30: Customer Services Department

Subnetting:

- **VLAN 10**:
  - Network: 192.168.10.0
  - Range: 192.168.10.1 - 192.168.10.14
  - Gateway: 192.168.10.1
  - Broadcast: 192.168.10.15
  - Interfaces: f0 - f3
- **VLAN 20**:
  - Network: 192.168.20.0
  - Range: 192.168.20.1 - 192.168.20.14
  - Gateway: 192.168.20.1
  - Broadcast: 192.168.20.15
  - Interfaces: f4 - f6
- **VLAN 30**:
  - Network: 192.168.30.0
  - Range: 192.168.30.1 - 192.168.30.14
  - Gateway: 192.168.30.1
  - Broadcast: 192.168.30.15
  - Interfaces: f7 - f9

Configuration Steps:

1. **Assign VLANs to Switch Ports:**

```
configure terminal
interface range f0-f3
switchport mode access
switchport access vlan 10
exit
```

```
interface range f4-f6
switchport mode access
switchport access vlan 20
exit

interface range f7-f9
switchport mode access
switchport access vlan 30
exit
```

5. Configuring Inter-Vlan Routing (Router on a stick)

```
interface f10.10
encapsulation dot1Q 10
ip address 192.168.10.1 255.255.255.240
exit

interface f10.20
encapsulation dot1Q 20
ip address 192.168.20.1 255.255.255.240
exit

interface f10.30
encapsulation dot1Q 30
ip address 192.168.30.1 255.255.255.240
exit
```

6. Configuring DHCP Server (Router as the DHCP Server)

DHCP Configuration Tutorial:

Step 1: Access Router Configuration

Access the configuration mode of your router. You're already in the router's CLI. Now, let's proceed with configuring DHCP.

Step 2: Configure DHCP on the Router

1. **Enter DHCP Configuration Mode:**

```
Router(config)# ip dhcp pool VLAN10
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 8.8.8.8
Router(dhcp-config)# exit
```

This creates a DHCP pool for VLAN 10, specifies the network range, default gateway, and DNS server.

2. **Repeat for VLAN 20 and VLAN 30:**

```
Router(config)# ip dhcp pool VLAN20
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 8.8.8.8
Router(dhcp-config)# exit

Router(config)# ip dhcp pool VLAN30
Router(dhcp-config)# network 192.168.30.0 255.255.255.0
Router(dhcp-config)# default-router 192.168.30.1
Router(dhcp-config)# dns-server 8.8.8.8
Router(dhcp-config)# exit
```

Repeat the process for VLAN 20 and VLAN 30, replacing the network addresses and default router addresses accordingly.

Step 3: Verify DHCP Configuration

Use the commands you've provided to verify the DHCP configuration:

- `Router# show ip interface brief`: Verify that the interfaces have IP addresses assigned to them and that they are up and up.
- `Router# show ip dhcp pool`: Verify the DHCP pools and their configurations.
- `Router# show ip dhcp binding`: Check the DHCP bindings to see which devices have been assigned IP addresses.

Step 4: Enable Router Interfaces

Ensure that the router interfaces are enabled:

```
Router(config)# interface GigabitEthernet0/0
Router(config-if)# no shutdown
Router(config-if)# exit
```

Enable any other interfaces that you want to use.

Step 5: Save Configuration

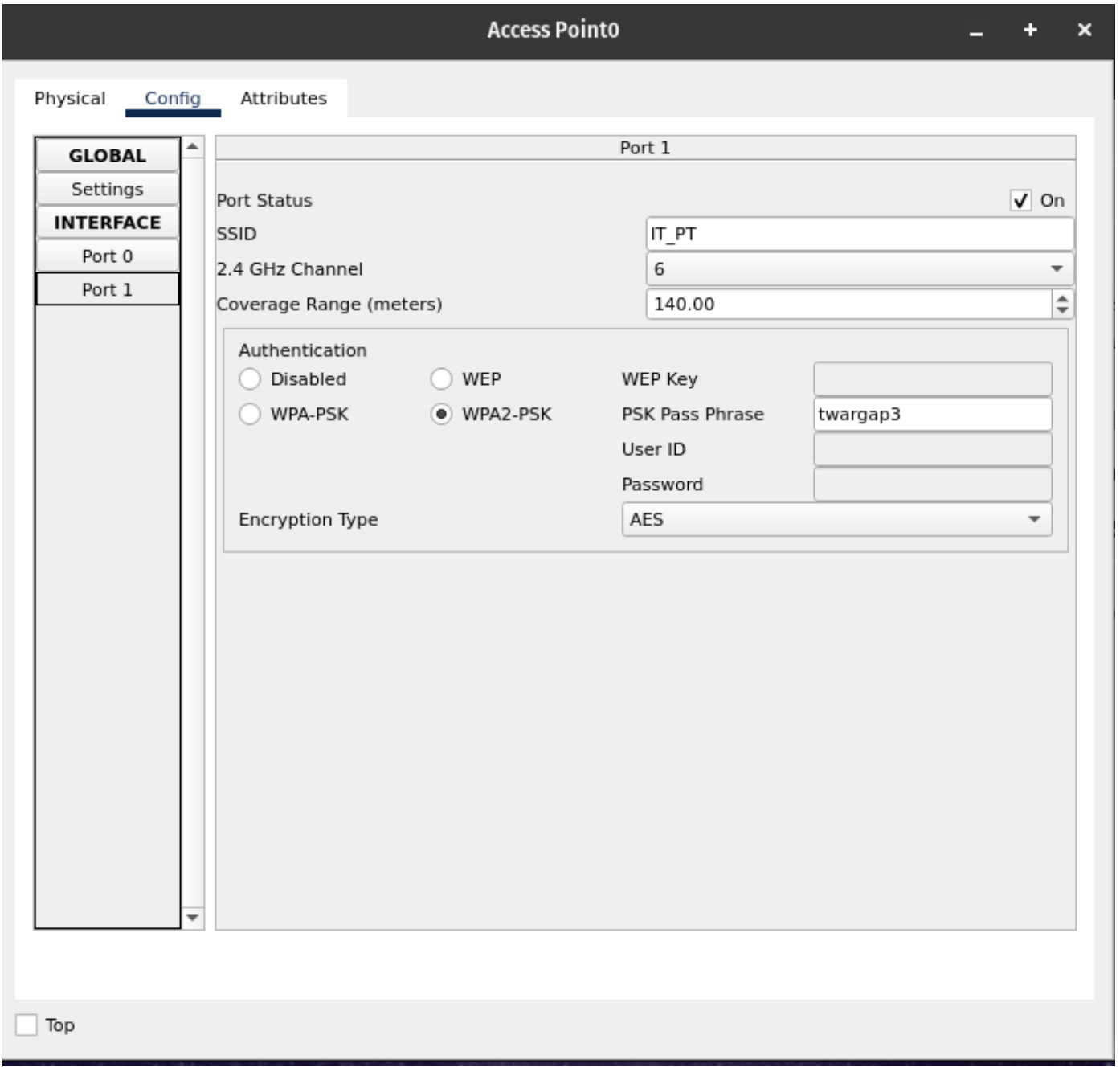
Don't forget to save your configuration changes:

```
Router# write memory
```

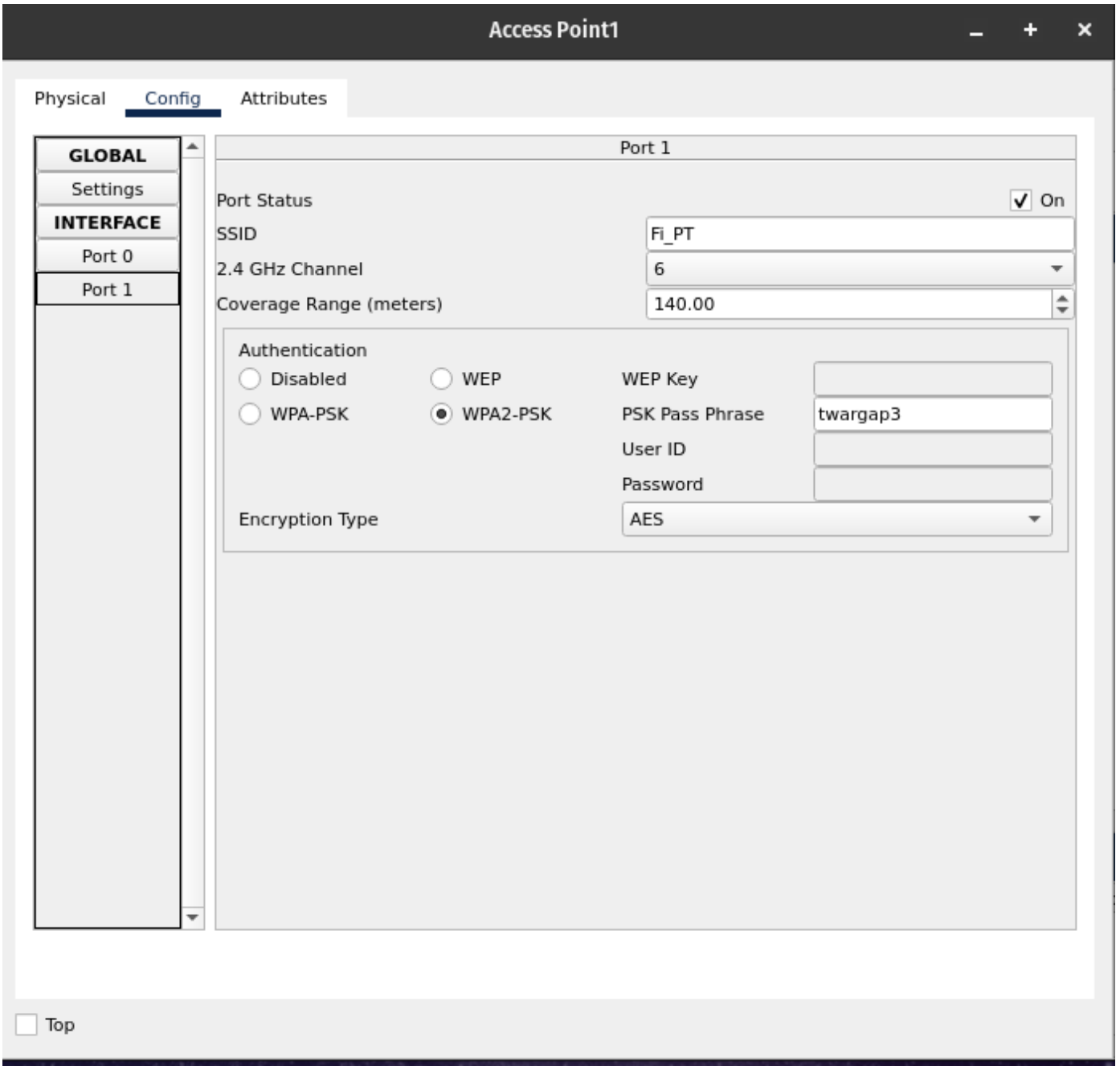
This command saves the configuration to the router's startup configuration, ensuring that your changes persist after a reboot.

7. Configuring WLAN or Wireless network (Cisco Access Point)

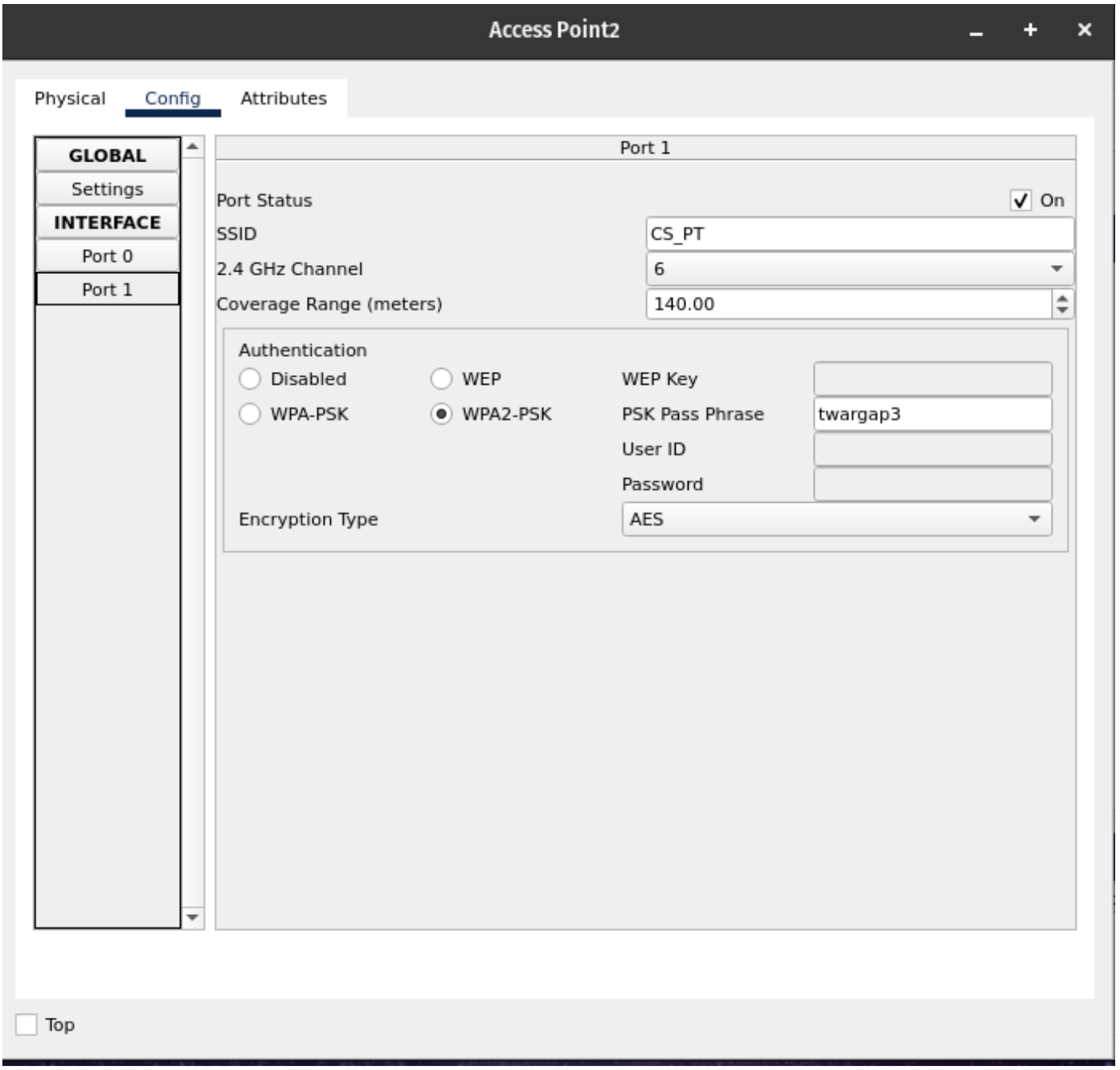
IT department



Finance department



Customer Support department


Access Point2
Physical
Config
Attributes
GLOBAL
Settings
INTERFACE
Port 0
Port 1
Port 1
Port Status
On
SSID
CS_PT
2.4 GHz Channel
6
Coverage Range (meters)
140.00
Authentication
Disabled
WEP
WPA-PSK
WPA2-PSK
WEP Key
PSK Pass Phrase
twargap3
User ID
Password
Encryption Type
AES
Top