SMALL OFFICE HOME OFFICE NETWORK -SOHO

CISCO Project 1

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Project #2 Case Study and Requirements

Design a network in Cisco Packet Tracer of a Small Office Small Office Home Office Network -SOHO

XYZ company is a fast-growing company in Eastern Australia with more than 2 million 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 requires young IT graduates to design the network for the branch. The network is intended to operate separately from the 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 department is required to be in different VIANS.

Each department is required to have a wireless network for the 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.

Assume the ISP gave out a base network of 192.168.1.0, you as the young network engineer who has been hired, design and implement a network considering the above requirements.

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Technologies Implemented

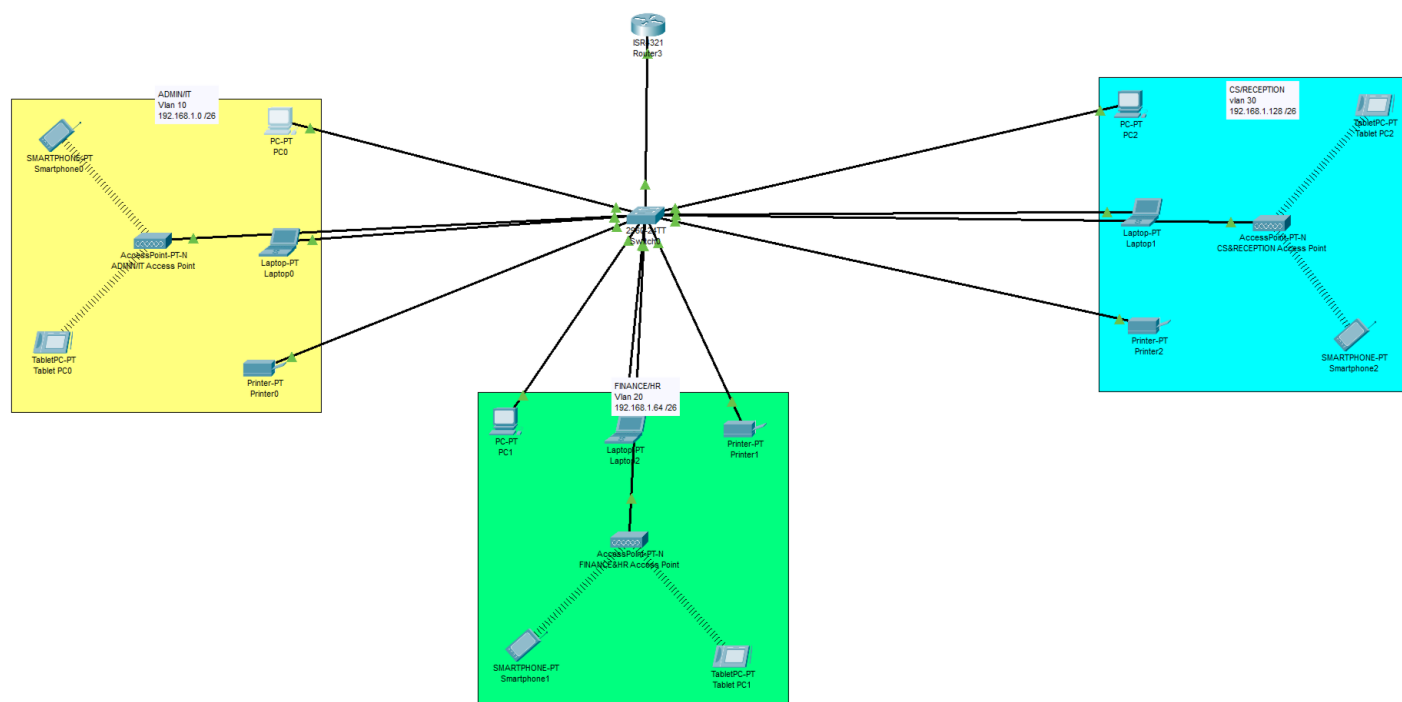## 1. Creating a Simple Network using a Router and Access Layer Switch.

Figure 1

2. Connecting Networking devices with Correct cabling.

Copper straight cable

3. Creating VLANs and assigning ports VLAN numbers.

Creating VLAN on Switch

S1(config)#vlan 10 S1(config-vlan)#name ADMIN/IT S1(config-vlan)#exit
S1(config)#vlan 20 S1(config-vlan)#name FINANCE/HR S1(config-vlan)#exit
S1(config)#vlan 30 S1(config-vlan)#name CR/RECEPTION S1(config-vlan)#exit

assigning VLAN on interface on switch

S1(config)#interface range fastEthernet 0/1-4
S1(config-if-range)#switchport mode access
S1(config-if-range)#switchport access vla10
S1(config-if-range)#exit
S1(config)#interface range fastEthernet 0/5-8
S1(config-if-range)#switchport mode access
S1(config-if-range)#switchport access vlan 20
S1(config-if-range)#exit
S1(config)#interface range fastEthernet 0/9-12
S1(config-if-range)#switchport mode access
S1(config-if-range)#switchport access vlan 30
S1(config-if-range)#exit
S1(config)#interface gigabitEthernet 0/1
S1(config-if)#switchport mode trunk
S1(config-if)#no shutdown
S1(config-if)#exit

4. Subnetting and IP Addressing.

subnet: 255.255.255.192 (/26)

Block Size = 64

DEPARTMENT	NETWORK ID	GATEWAYS / STARTING IP	LAST IP	BROADCAST ID	SUBNET MASK
1ST	192.168.1.0/26	192.168.1.1	192.168.1.62	192.168.1.63	255.255.255.192
2ND	192.168.1.64/26	192.168.1.65	192.168.1.126	192.168.1.127	255.255.255.192
3RD	192.168.1.128/26	192.168.1.129	192.168.1.190	192.168.1.191	255.255.255.192

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

Core_Router(config)#interface gigabitEthernet 0/0/0.10
Core_Router(config-subif)#encapsulation dot1Q 10
Core_Router(config-subif)#ip address 192.168.1.1 255.255.255.192   //on ip address set gateways
Core_Router(config-subif)#exit
Core_Router(config)#interface gigabitEthernet 0/0/0.20
Core_Router(config-subif)#encapsulation dot1Q 20
Core_Router(config-subif)#ip address 192.168.1.65 255.255.255.192   //on ip address set gateways
Core_Router(config-subif)#exit
Core_Router(config)#int gigabitEthernet 0/0/0.30
Core_Router(config-subif)#encapsulation dot1Q 30
Core_Router(config-subif)#ip address 192.168.1.129 255.255.255.192   //on ip address set gateways
Core_Router(config-subif)#exit

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

Core_Router(config)#service dhcp
Core_Router(config)#ip dhcp pool Admin-pool
Core_Router(dhcp-config)#network 192.168.1.0 255.255.255.192
Core_Router(dhcp-config)#default-router 192.168.1.1
Core_Router(dhcp-config)#dns-server 192.168.1.1
Core_Router(dhcp-config)#domain-name Admin.com
Core_Router(dhcp-config)#exit
explain each cmd in deep details
Core_Router(config)#ip dhcp pool Finance-Pool
Core_Router(dhcp-config)#network 192.168.1.64 255.255.255.192
Core_Router(dhcp-config)#default-router 192.168.1.65
Core_Router(dhcp-config)#dns-server 192.168.1.65
Core_Router(dhcp-config)#domain-name finance.com
Core_Router(dhcp-config)#exit

Core_Router(config)#ip dhcp pool CS-Pool

Core_Router(dhcp-config)#network 192.168.1.128 255.255.255.192

Core_Router(dhcp-config)#default-router 192.168.1.129

Core_Router(dhcp-config)#dns-server 192.168.1.129

Core_Router(dhcp-config)#domain-name cs.com

Core_Router(dhcp-config)#exit

*If you are configuring a **Cisco router or switch**, you should use:*

*Router#**show ip dhcp binding***

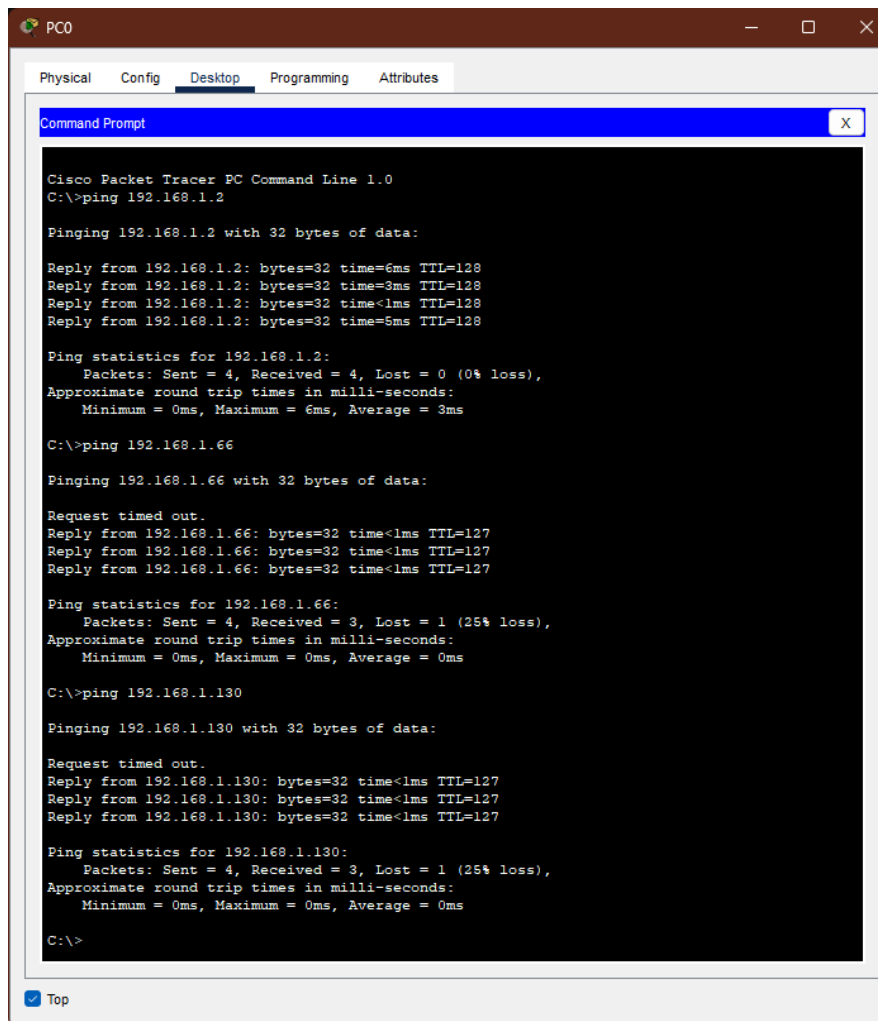*This command will display the **list of devices** that have received an IP from the DHCP server.*

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

All the Wireless AP will automatically learn the IP address From Core Router.

8. Host Device Configurations.

Select the device and on that you find the **Desktop** on that you will find the **Command Prompt** types cmd **ipconfig /renew**

9. Test and Verifying Network Communication.