

## **CUSTOMER REQUIREMENTS**

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:**

- a) 4 departments (Workstation, Cabin, Control Room, Waiting Hall)
- b) Each department is required to be in different VLANs.
- c) Each department is required to have a wireless network for the users.
- d) Each department needs an IP Phone for communication.
- e) Need a server for “Web Hosting” with a DNS name.
- f) Host devices in the network are required to obtain IPv4 addresses automatically (DHCP).
- g) Devices in all the departments are required to communicate with each other.

Assume the ISP gave out a base network of 192.168.1.1, as the young network engineer who has been hired, designed, and implemented a network considering the above requirements.

## **VLAN CONFIGURATION**

Base address:192.168.1.1

No of Subnets: 4

Class C: 255.255.255.0 → 11111111. 11111111. 11111111.00000000

After Borrowing: 2bits.

New Subnet:255.255.255.192 → 11111111. 11111111. 11111111.11000000

Block size=64.

Numbers of usable host:62

### **1<sup>st</sup> Subnet**

#### **Vlan10 (workstation)**

Network address: 192.168.1.0

Subnet:255.255.255.192

Range: 192.168.1.1-192.168.1.62

Broadcast address: 192.168.1.63

#### **Access Point**

SSID=WORK-PLACE

Password=Cisco@123

### **2<sup>nd</sup> Subnet**

#### **Vlan20 (Cabin)**

Network address: 192.168.1.64

Subnet:255.255.255.192

Range: 192.168.1.65-192.168.1.126

Broadcast address: 192.168.1.127

#### **Access Point**

SSID=LOGAN-CABIN

Password=Cisco@123

### **3<sup>rd</sup> Subnet**

#### **Vlan30 (control room)**

Network address: 192.168.1.128

Subnet:255.255.255.192

Range: 192.168.1.129-192.168.1.190

Broadcast address: 192.168.1.191

**Server** DNS Name: [www.logan's-office.com](http://www.logan's-office.com) (IP address: 192.168.1.130) static

#### **4<sup>th</sup> Subnet**

##### **Vlan40 (waiting hall)**

Network address: 192.168.1.192

Subnet:255.255.255.192

Range: 192.168.1.193-192.168.1.254

Broadcast address: 192.168.1.255

##### **Access Point**

SSID=WAITING-HALL

Password=Cisco@123

### **IP PHONE CONFIGURATION**

(IP Phone configuration is available only on router 2811 so it comes from out of the main network.)

Base IP address:192.168.10.1

VLAN10 (VOICE)

Phone 1 number:54000

Phone 2 number:54002

Phone 3 number:54003

Phone 4 number:54004

### **NUMBER OF NETWORK DEVICES USED**

Router 2901 ➔ 1

Router 2811 ➔ 1

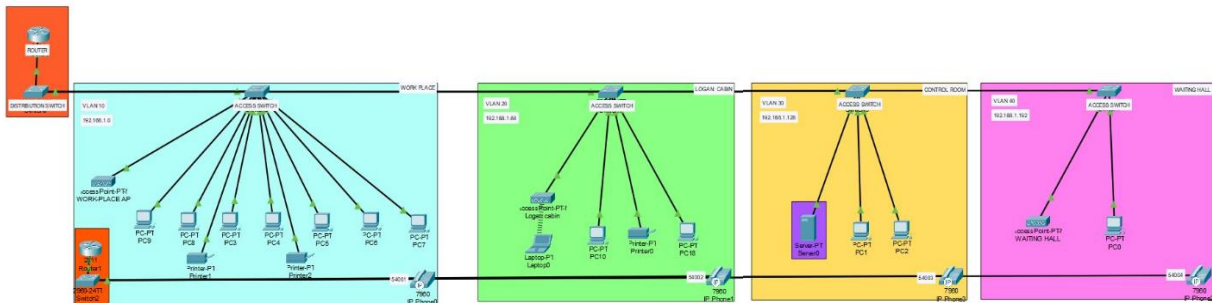
Distribution layer switch ➔ 1

Access layer switch ➔ 5

Server ➔ 1

IP Phones ➔ 4

# LOGICAL VIEW



# RACK VIEW

