**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

**1st 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

**2nd 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

**3rd 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

**4th 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

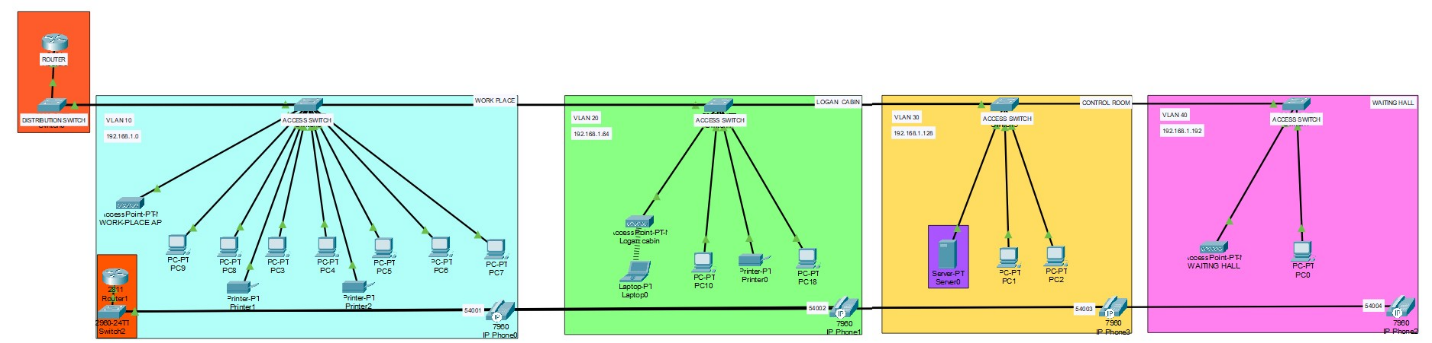
Distribution layer switch 🡺 1

Access layer switch 🡺 5

Server 🡺 1

IP Phones 🡺 4

**LOGICAL VIEW**



**RACK VIEW**

