# Design and Implementatioın of a Small Office Home Office Network – Project 2

## Project#2 Case Study & Requirements

X company is a fast-growing company in Eastern Australi with morethan 2 million custormers globally. They company deals with selling and buying of food items, which are basically operated from te headquarters. The company is intending to open a branch near the local village Bonalbo. Thus, the comapny requires young IT gradutes to design the network for he branch. The network is intended to operate separetely from the HQ network. Being a small network, the company has the fllowing requirements during implementation.

* One router an done switch to be used
* 3 departments(Admin/IT,Finance/HR and Customer Service/Reception)
* Each department is required to be in different VLANS
* 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.

## 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 Poing)
8. Host Device Configurations
9. Test and Verifying Network Communication

### Subnetting

Base Network : 192.168.1.0

Number of Subnets = 3, 2^n>=3, n 🡺2

Class C Subnet Mask : 255.255.255.0 🡺11111111.11111111.11111111.00000000

After borrowing 2 bits

New SM : 11111111. 11111111. 11111111.11000000 🡺255.255.255.192

#### First Subnet

Network ID : 192.168.1.0

Host Range :192.168.1.1-192.168.1.62

Broadcast ID :192.168.1.63

#### Second Subnet

Network ID : 192.168.1.64

Host Range :192.168.1.65-192.168.1.126

Broadcast ID :192.168.1.127

#### Third Subnet

Network ID : 192.168.1.128

Host Range :192.168.1.129-192.168.1.190

Broadcast ID :192.168.1.191