MAPUA UNIVERSITY
SCHOOL OF ELECTRICAL, ELECTRONICS AND COMPUTER ENGINEERING

# Network Topology for Expanding Business: Go To Mo To Han

Presented by:
**Ciscolarium**

Members:
**De Jesus, Jason Dave**
**Ronato, Jennia**
**Topacio, Marjoree Anne**
**Villareal, Jannie**
**Virgo, Gracious**

**ECE161L – B1**

A network design submitted to:

**Engr. Andrew Kim Pahutan**

In partial fulfillment of the requirements for the course, routing and switching essentials

**June 2017**

# I SITUATIONAL PROBLEM

The owner of the established gotohan business, “Go To Mo To Han”, plans on putting up another branch located at New York, Cubao. Meanwhile, the main branch, and the supplies warehouse are located at Quezon City and Espanya respectively. Herewith, the owner requests to establish a more organize connections among its growing business; aiming to ease the workload on its business operations by creating a better and faster communication between the main branch, the newly open one, and the supplies warehouse. But then, blocking access between the New York branch and the warehouse will be implemented, since the owner wants to provide the overall access to the main branch for monitoring purposes. The owner also wanted the main branch to have internet access in order to contact suppliers and such. Moreover, Go To Mo To Han owner wishes to establish secure connections among the said networks.

With this, the owner ventures on upgrading its system by requesting a setup of a network topology, specially designed to accommodate its needs and help modernize their gotohan business. Having this proposed network design, may result for quicker response in business operating hours for Go To Mo To Han.

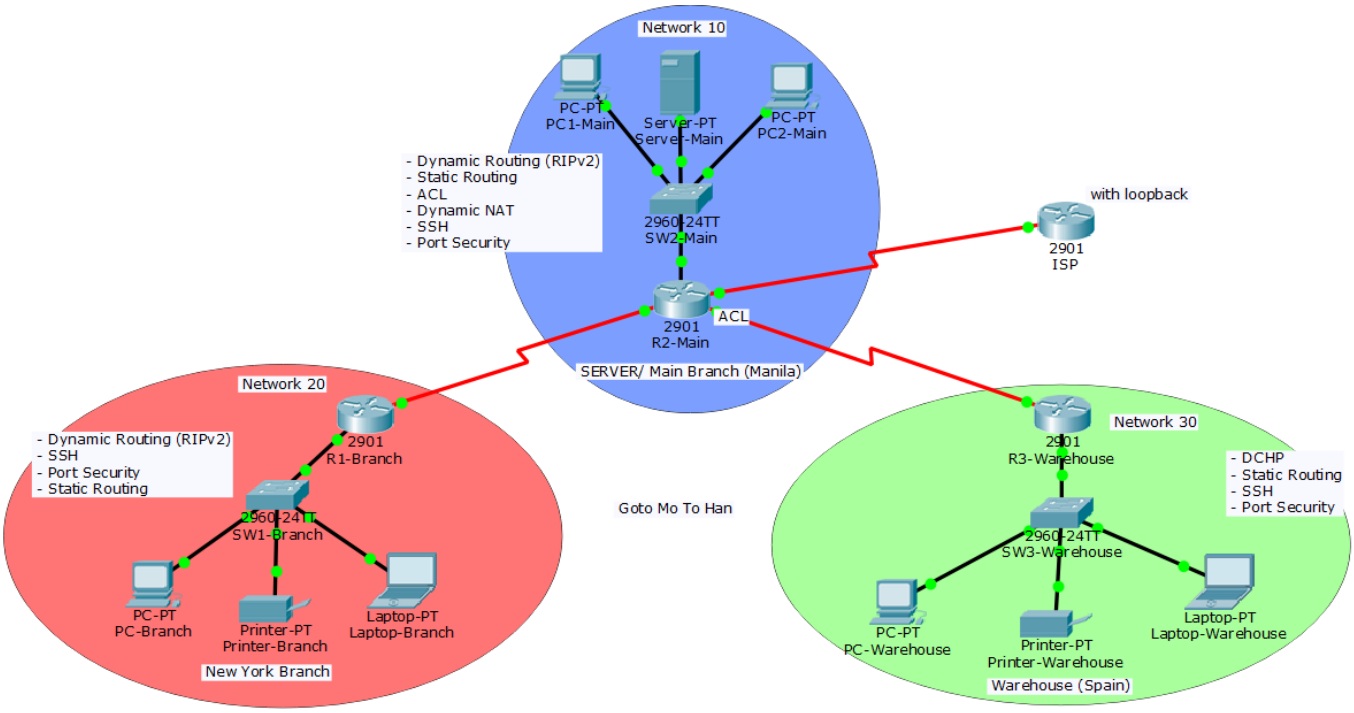
## II OBJECTIVES

The group intends to implement the concepts, commands, and methods that were learned in the course Routing and Switching Essentials to build and simulate a proposed network design for the business Go To Mo To Han through packet tracer and using Cisco Network Academy Laboratory Equipment.

The group aims specifically the following:

- To apply concepts in switching such as port security.
- To apply concepts in routing both static and dynamic.
- To provide remote access using SSH.
- To apply dynamic host control protocol (DHCP).
- To restrict certain networks using access lists (ACL).
- To provide internet access to certain network thru the use of dynamic NAT.

## III PROPOSED NETWORK TOPOLOGY




There are three main networks in this topology namely network 10, 20, and 30. Network 20 is for New York Branch that are configured by a switch (SW1) and a router (R1). In S1, SSH and Port security are set. It has a maximum of 5 changes for f0/1 to 4 and the MAC address sticky are also configured. This setup for SW1 would be similar to the switches in other networks (SW2 & SW3), they would only change in interfaces where these settings are applied.

Moving on to R1, this is configured to run dynamic routing to R2 and a static routing connection to R3. This static configuration is only necessary to demonstrate the effects of ACL which would be applied at R2.

The router on network 10 (R2) is the router for the main branch, here configurations such as dynamic routing going to R1 and static routing going to R3 are also used. Additionally, a dynamic network address translation (NAT) is also set in this device. This would provide internet

access to network 10 alone. As mentioned before, R2 would apply the necessary named ACL restriction for network 20. The ACL would be applied to interface Serial 0/0/1 outbound. This will block any type of connection from network 20 going to network 30.

Lastly, R3 is configured to provide DHCP addressing to its hosts. It is also responsible to have static routing for networks 10 and 20. All of the networking devices have proper housekeeping commands such as banners and encrypted passwords for priv-exec and line con.

## IV NETWORK ADDRESSES USED

| Network 10 | 192.168.10.0/24 | |
|---|---|---|
| **Device** | **Interface** | **IP Address** |
| **R2 – Main** | G0/0 | 192.168.10.1 |
| | S0/0/0 | 192.168.40.2 |
| | S0/0/1 | 192.168.50.2 |
| | S0/1/0 | 209.165.201.1 |
| **PC1 - Main** | F0/3 | 192.168.10.4 |
| **PC2 - Main** | F0/2 | 192.168.10.3 |
| **Server - Main** | F0/1 | 192.168.10.2 |
| **SW2 - Main** | VLAN 1 | 192.168.10.254 |
| **Network 20** | **192.168.20.0/24** | |
| **R1 – Branch** | G0/0 | 192.168.20.1 |
| | S0/0/0 | 192.168.40.1 |
| **PC –Branch** | F0/1 | 192.168.20.2 |
| **Laptop – Branch** | F0/3 | 192.168.20.4 |
| **Printer Branch** | F0/2 | 192.168.20.3 |
| **SW1 - Branch** | VLAN 1 | 192.168.20.254 |
| **Network 30** | **192.168.30.0/24** | |
| **R3 - Warehouse** | G0/0 | 192.168.30.1 |
| | S0/0/0 | 192.168.50.3 |
| **PC – Warehouse** | F0/2 | 192.168.30.2 |
| **Laptop - Warehouse** | F0/4 | 192.168.30.4 |
| **Printer – Warehouse** | F0/3 | 192.168.30.3 |
| **SW3 - Warehouse** | VLAN 1 | 192.168.30.254 |
| **ISP / Internet Pool** | **209.165.200.226/27** | |
| **ISP** | S0/0/0 | 209.165.201.2 |
| **Loopback** | G0/0 | 192.168.60.1 |

# V LABORATORY DEMONSTRATION TOPOLOGY