

## Project 4 – ENTERPRISE NETWORKING PROJECT

**Albion university** is a large university which **has two campuses** situated 20 miles apart. The university's students and staff are **distributed in 4 faculties**:

- Health & Sciences
- Business
- Engineering & Computing
- Art & Design

### Requirements

- a. Create a network topology with the main components to support the following:
  - **Main campus**
    - i. **Building A:** Departments of **Administrative staff, Management, HR, and Finance**. The admin staff PCs are distributed in the building offices, and it is expected that they will share some networking equipment (VLANs)
    - ii. **Building B:** Faculty of **Engineering & Computing** and Faculty of **Art & Design**.
    - iii. **Building C: Students' labs and IT department**. The IT department hosts the University Web server and other servers.
    - iv. There is also an **email server hosted externally on the cloud**.
  - **Smaller campus:**
    - i. **Faculty of Health and Sciences:** staff and students' lab are situated on separated floors.
- b. You will be expected to configure the **core devices and few end devices to provide end-to-end connectivity and access to the internal servers** and the external server.
  - Each department/Faculty is expected to be on its **own separate IP network**.
  - The switches should be configured with **appropriate VLANs and Security Settings**
  - **RIPv2** will be used to provide **routing for the routers in the internal network and static routing for the external server**.
  - The **devices in Building A** will be expected to **acquire dynamic IP address from a routed-based DHCP server**.

The project will be developed as a Three-Tier model, which will have 3 Layers: Core, Distribution and Access. In this case, it won't have redundancy.

## ADDRESSING

### Networks Address Allocation

Building A				
Department	Network	Mask	Host Range	Broadcast
ADMIN	192.168.1.0	255.255.255.0 /24	1.1 – 1.254	192.168.1.255
HR	192.168.2.0	255.255.255.0 /24	2.1 – 2.254	192.168.2.255
FINANCE	192.168.3.0	255.255.255.0 /24	3.1 – 3.254	192.168.3.255
BUSINESS	192.168.4.0	255.255.255.0 /24	4.1 – 4.254	192.168.4.255
Building B				
E&C	192.168.5.0	255.255.255.0 /24	5.1 – 5.254	192.168.5.255
A&D	192.168.6.0	255.255.255.0 /24	6.1 – 6.254	192.168.6.255
Building C				
Stud LAB	192.168.7.0	255.255.255.0 /24	7.1 – 7.254	192.168.7.255
IT	192.168.8.0	255.255.255.0 /24	8.1 – 8.254	192.168.8.255
Branch – Health & Sciences				
Stud LAB	192.168.10.0	255.255.255.0 /24	10.1 – 10.254	192.168.10.255
Staff	192.168.9.0	255.255.255.0 /24	9.1 – 9.254	192.168.6.255

### DHCP Server Pools

HQ Network			
Department - VLAN	Default GW /Mask	Start IP Addresss	Number of Devices
Admin - 10	192.168.1.1 /24	192.168.1.2	253
HR – 20	192.168.2.1 /24	192.168.2.2	253
Finance – 30	192.168.3.1 /24	192.168.3.2	253
Business – 40	192.168.4.1 /24	192.168.4.2	253
EyC – 50	192.168.5.1 /24	192.168.5.2	253
AyD – 60	192.168.6.1 /24	192.168.6.2	253
StudLab – 70	192.168.7.1 /24	192.168.7.2	253
IT – 80	192.168.8.1 /24	192.168.8.2	253
Staff – 90	192.168.9.1 /24	192.168.9.2	253
SutLabBranch - 100	192.168.10.1 /24	192.168.10.2	253

### Ports Address Allocation

Device	Interface	IP Address /mask	Default GW
Main-Campus Router	Se 0/1/0	10.10.10.5 /30	
	Se 0/1/1	10.10.10.1 /30	
	Gi 1/0/1.10	192.168.1.1 /24	
	Gi 1/0/1.20	192.168.2.1 /24	
	Gi 1/0/1.30	192.168.3.1 /24	
	Gi 1/0/1.40	192.168.4.1 /24	
	Gi 1/0/1.50	192.168.5.1 /24	
	Gi 1/0/1.60	192.168.6.1 /24	
	Gi 1/0/1.70	192.168.7.1 /24	
	Gi 1/0/1.80	192.168.8.1 /24	
Branch-Router	Se 0/2/0	10.10.10.2 /30	
	Gi 0/0.90	192.168.9.1 /24	
	Gi 0/0.100	192.168.10.1 /24	
Email-Server	Fa0	20.0.0.2 /30	20.0.0.1

