

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; these include the faculty of Health and Sciences; Business; Engineering/Computing and Art/Design. Each member of staff has a PC and students have access to PCs in the labs.

### Requirements:

- a. Create a network topology with the main components to support the following:
  - Main campus:
    - **Building A:** Administrative staff in the departments of 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 (Hint: use of VLANS is expected here). The Faculty of Business is also situated in this building.
    - **Building B:** Faculty of Engineering and Computing and Faculty of Art and Design.
    - **Building C:** Students' labs and IT Department. The IT department hosts the University Web Server and other servers.
    - There is also an email server hosted externally on the cloud.
  - Smaller Campus:
    - Faculty of Health and Sciences (staff and students' labs are situated on separate 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 the 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 addresses from a router-based DHCP server.

### Tasks:

1. Your task is to plan, design, and prototype the network topology for Albion University's network using Cisco Packet Tracer.
2. Configure in Packet Tracer the network with the appropriate settings to achieve the connectivity and functionalities specified in the requirements.
3. Produce a report (max 1500) including evaluation of your proposed network design and critical appraisal on your work. Your evaluation should include performance, scalability, reliability and security of your proposed network.

### Technologies Implemented

- Creating a network topology using Cisco Packet Tracer.

- Hierarchical Network Design.
- Connecting Networking devices with Correct cabling.
- Creating VLANs and assigning ports VLAN numbers.
- Subnetting and IP Addressing.
- Configuring Inter-VLAN Routing (Router on a stick).
- Configuring DHCP Server (Router as the DHCP Server).
- Configuring SSH for secure Remote access.
- Configuring RIPv2 as the routing protocol.
- Configuring switchport security or Port-Security on the switches.
- Host Device Configurations.
- Test and Verifying Network Communication.