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PROJECT PROPOSAL

**PROJECT_TITLE: CAMPUS/UNIVERSITY SYSTEM NETWORK
DESIGN IN CISCO PACKET TRACER**

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INTRODUCTION:

A campus network, campus area network, corporate area network or CAN is a computer network made up of an interconnection of local area networks (LANs) within a limited geographical area. The networking equipments (switches routers) and transmission media (optical fiber, copper, CAT5 cabling etc.) are almost entirely owned by the campus tenant / owner.

A campus area network is larger than a local area network but smaller than a metropolitan area network (MAN) or wide area network (WAN).

College or university campus area networks often interconnect a variety of buildings, including administrative buildings, academic buildings, university libraries, campus or student centers, residence halls, gymnasiums, and other outlying structures, like conference centers, technology centers, and training institutes.

PROJECT CASE STUDY:

A large University which has two campuses situated 20 miles apart. The university's students and staff are distributed in ***four-faculties***; these include the faculties 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. Creating a network topology with the main components to support the following:

REQUIREMENTS:

- *University location.*

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. 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: Student's labs** and **IT department**. The *IT department* hosts the *University Web server and other servers*.

EMAIL_SERVER:

- There is also an **Email_server hosted externally** on the *cloud*.

SMALLER CAMPUS:

- **Faculty of Health and Sciences** (*staff and student's labs* are situated on separate floors).

- Each *department/faculty* is expected to be on its own **separate IP network**.
- The *switches* should be *configured* with appropriate **VLANs** and **security settings**.
- **RIP-version_2** 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*.

To Configure in Packet Tracer the network with appropriate settings to achieve the connectivity and functionalities specified in the requirements.

TECHNOLOGIES IMPLEMENTED:

1. Creating a network topology using Cisco Packet Tracer.
2. Hierarchical Network Design.
3. Connecting Networking devices with Correct cabling.
4. Creating VLANs and assigning ports VLAN numbers.
5. Subnetting and IP Addressing.
6. Configuring Inter-VLAN Routing (Router on a stick).
7. Configuring DHCP Server (Router as the DHCP Server).
8. Configuring SSH for secure Remote access.
9. Configuring RIPv2 as the routing protocol.
10. Configuring switchport security or Port-Security on the switches.
11. Host Device Configurations.
12. Test and Verifying Network Communication.

Network Topology Created:

The network topology below satisfy the user requirements above and everything is verified, tested and working fine;

