Group Network Design Assignment

BCIS/25B/PT
CAN2120C- CN

This assignment is worth 25% of the total marks for this module. The deadline for this assignment is **3rd February 2027 at 11:59 pm**. Group Leader need to send me the assignment for his/her group in .doc or .pdf format at bcis25bpt@rishiheerasing.net.

Objectives

In this assignment, you are required to design a network solution for a typical organisation that requires its users to communicate internally and externally.

Organisation Requirements

A new educational institute **LearnIT** has just opened up with the aim of offering IT related courses to its students. It shall host student computer labs as well as host its website and other online services on premises. The institute has subscribed to a 10 Mbps Internet connection and was granted a **block of public IP address: 202.123.21.120 /29** from its ISP.

It terms of infrastructure; the institute shall require the following:

- A server to host the institute's website & another server for the Learning Management System (LMS) on which students can access course materials from home. Each of these shall be reached on a different sub-domain names e.g. **www.LearnIT.com** and **lms.LearnIT.com** respectively. Other servers might be procured wherever necessary.
- The institute wants to set up **five** computer labs, each containing **20 PCs** on **static IP addressing**, each having **restricted** internet connectivity.
- Additionally, **one network point** on Dynamic IP addressing shall be available in each of the five classrooms and are to be used by the lecturers for connecting their laptops. These **five network points** require **unrestricted** internet connectivity.
- **Three PCs** will be given to the system administrator in the Server Room for network and system management purposes. Also, **one PC** will be made available for **each of the three administrative staff** and **each of the three Teaching Assistants** (TA). **Note:** The **staff PCs** should have **unrestricted Internet connectivity** but the **TA PCs** must have **internal network access** (website and LMS) **only**.
- Finally, a secured wireless network should be made available to students over the campus which can allow students **internal access to the LMS and web server** but with **restricted access** to the Internet.

Your task is to come up with a logical, efficient and scalable network design that will be suitable for this institute. The institute has allowed an adequate budget to purchase any equipment that may be required, yet obviously not spend more than necessary.

Design Details

When drawing up your network designs make sure you split the design up in a way that emphasizes the function of the components. Keep the design as simple as possible allowing efficient troubleshooting while guaranteeing the least downtime in the system. Always split up networks in terms of function, since PCs with similar function most probably will often communicate between themselves. You are free to use some form of physical subnetting or use VLANs. Also do not forget about the ISP link in the Server Room!!!

Deliverables

Build a report giving all the necessary network designs (logical and physical network diagrams should be provided that will allow any technician to build your network structure from scratch). You are free to use any network case tool for the designs and this should be incorporated in your report. You will need to provide all the configuration information for all client, servers, circuits and devices that you find pertinent in your solution.
Additionally, you will have to perform a cost-assessment and come up with a tentative budget for your solution. Your solution should address any security issues. Best practices should be used wherever possible. Policies might also need to be specified.

Institute Layout

