

	FACULTY OF COMPUTING			MARKS:
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Instructions:

1. This assessment is a group project with a maximum of 5 students in a group.
2. This project carries out 25% from your coursework marks.
3. Discuss among yourself and appoint a group leader (Group representative).
Group leader is responsible for task distribution, Report submission in Kalam etc.
4. It is advice to complete the assignment using any resources available such as book and Internet.
5. Any resources that have been used for this assessment (book, technical paper, website and other), compulsory to be cited in report and list them as references.
6. Report: contain step by step explanation with graphical image if necessary (based on question)
7. Each report will be checked for its similarity. Whoever submit the equal answer/report, both copier and who allow the copy, straightly will be given 2/20marks.
8. You need to prepare a video presentation for 10 minutes. The video presentation is according to your creativity. Your creativity might contribute you more marks.
9. **1st progress** submission will be on **Week 8**.
10. **Final report** submission will be on **Week 13**. **NO MARK** will be given for late submission.

Report Format:

1. Front page must contain project name, group members (name, id, and section), lecturer name.
2. Table of Contents
3. Font type – Century Gothic
4. Font size – 10 and double spacing
5. Provide the content based on tasks.
6. Please save your video in **MP4** format.
<group name><topic title>< section group:1A/1B/2A/2B >.mp4
Example: Crypto.Astrok.1B.mp4
7. Please save your report in **PDF** and name your assignment as following format:
<group name><type of assessment><section group:1A/1B/2A/2B>.pdf
Example: Router.Project.2A.pdf

Task:

Choose **one (1)** of the following organization and you need to write a report on any of the following research areas:

1. **Public Library**
2. **District Police Office**
3. **E-Healing Company**
4. **National Registration Department**
5. **Banking Sector**
6. **Telecommunication Industry**
7. **Employee Provident Fund Department**
8. **Council Office**
9. **Electric Power Provider**
10. **State Education Department**

Project Instructions:

You are appointed as a consultant in IT company received an RFP invitation letter from the organization. Based on the RFP letter, you are requested to bid the network infrastructure tender. This tender required you to prepare the comprehensive response to RFP document and need you to study the detail requirement to develop the organization networking. Your proposal must include the information such as planning, analysis, design, and so on, and must prove the proposed network design is the optimum communication for data transmission. The minimum technical requirement as stated in the letter is as follows.

Request For Proposal – Supply and Installation of Network Infrastructure System**Project Requirements:**

In this project, you will design a network for the organization that you choose above. The organization want to implement the network infrastructure. Connection to the internet will be provided by an ISP. The company is occupying 3 floors in a building. Floor 1 contains the administration offices of the company. The organization also require a VPN setup for at least 30 staff who works remotely.

Here are the requirements for floor 1:

- The network in this building should service at least 20 employees.
- Each employee should have at least one wired and 2 wireless connections.
- This floor is the administration part of the company, and clients will not be accessing it. However, the company would like to make 10 additional wireless connections available for visitors that might be present in this floor.
- There are two printers in this floor.

- This floor also contains the servers of the company as well as the router receiving the connection from the ISP and the main switch that will service the switches of the three floors.

Floor 2 and floor 3 are the main service floors of the company.

The following are the requirements for floor 2:

- The network in this floor should service 30 employees. Each employee should have at least one wired and 2 wireless connections.
- This floor will service many clients, and the company wants to ensure that they have a wireless connection. The connection should support as many clients as employees at any time.
- The floor contains two printers.

The following are the requirements for floor 3:

- The network in this floor should service 50 employees. Each employee should have at least one wired and 2 wireless connections.
- As in the case of floor2 in this building, this floor will service many clients, and the company wants to ensure that they have a wireless connection. The connection should support as many clients as employees at any time.
- The floor contains three printers.

The following are the general requirements for the network:

- The company requires the networks for the three different floors to be different subnets. The connection between these 3 subnets is wired.
- Each floor requires at least one wireless access point.
- Wireless devices could be smartphones, tablets, or laptops.
- The company would like to have its own email domain and service.
- The company would like the addressing of the devices to be dynamic.
- The company would like to have its website hosted on a server that it owns.

In order to carry out this design project, you are required to answer the following questions:

(Should be included in 1st progress submission)

- What is the IP address class required to meet all the above-mentioned requirements? Justify your decision.
- Suggest an address from the class you suggested previously along with a mask. This would be the address the company is getting from the ISP.
- What are the masks required to meet the subnetting requirements of the network and each subnetwork for each floor? Justify your decisions.

- What are the specifications of the used switches in this network? The network requires 4 switches: one main switch and one switch per floor. Justify your decisions.
- What are the specifications of the wireless access points in each floor? Justify your decisions.
- What are the servers that the organization must have?

Technical Requirements

Example of Equipment for the technical requirements in the given project (**You may propose your own requirement that suit to your project**):

- Cabling – fiber-optic and UTP Cat 5e/6
- Switch and Router can support user application
- Server – basic network servers
- Security issues
- Inter-operable with existing equipment
- Standards based routing protocols (OSPF, BGP, RIP, ISIS)
- Multiple QoS levels
- PoE Ready
- VoIP Compliant
- H323 Compliant
- H225 Compliant
- Support for AAA protocol
- Multi-cast Compliant
- Ability to monitor traffic flows
- Handle multiple 1 gig connections at line rate.
- Upgradable to 10 gig
- Handle multiple 10 gig connections at line rate.
- IPv4 and IPv6 compliant
- Redundant backbone
- Redundant critical server
- Redundant/Hot swappable power supply
- Provide Mean Time Between Failures
- Centralized network management solution
- Wireless
 - a. Interoperable for 802.11 a/b/g/n
 - b. Centralized management of Access Points
 - c. PoE ready
 - d. Interoperable with existing access points

RFP Report Contents

1. Executive summary
2. Project goal
3. Project scope
4. Design requirement
5. Logical design
6. Physical design
7. Topology diagram
8. TCP/IP network design
9. Router configuration (LAN, Default route, access control lists, IP Helper address)
10. Proposed network security and network management strategies
11. Hardware list
12. Implementation plan
13. Project budget
14. A training plans
15. Support and service information
16. Appendices
17. References