UTM UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF COMPUTING
UTM Johor Bahru

NETWORK COMMUNICATIONS
(SECR 1213)

PROJECT
TASK 2: INITIAL DESIGN - PRELIMINARY ANALYSIS

Submitted To:
DR. RAJA ZAHILAH BINTI RAJA MOHD. RADZI

From:

GROUP 7 LAB RATS

No.	Name	Matric No.	Section
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TABLE OF CONTENTS

Questions & Answers

1. Which of the Internet Service Provider (ISP) is the best for you to use in the building?

- Unifi. This is because it has a download speed of up to 30Mbps to 800Mbps. Besides that, it has an upload speed of up to 10Mbps to 200Mbps. Therefore, there would be no problem in the sense of Internet speed for the users.

2. What type of network architecture would be suitable for the building?

- Local Area Networks (LANs). It is one of the most common types of networks and it is more typically used in buildings.

3. What are the types of servers that will be used together in the labs?

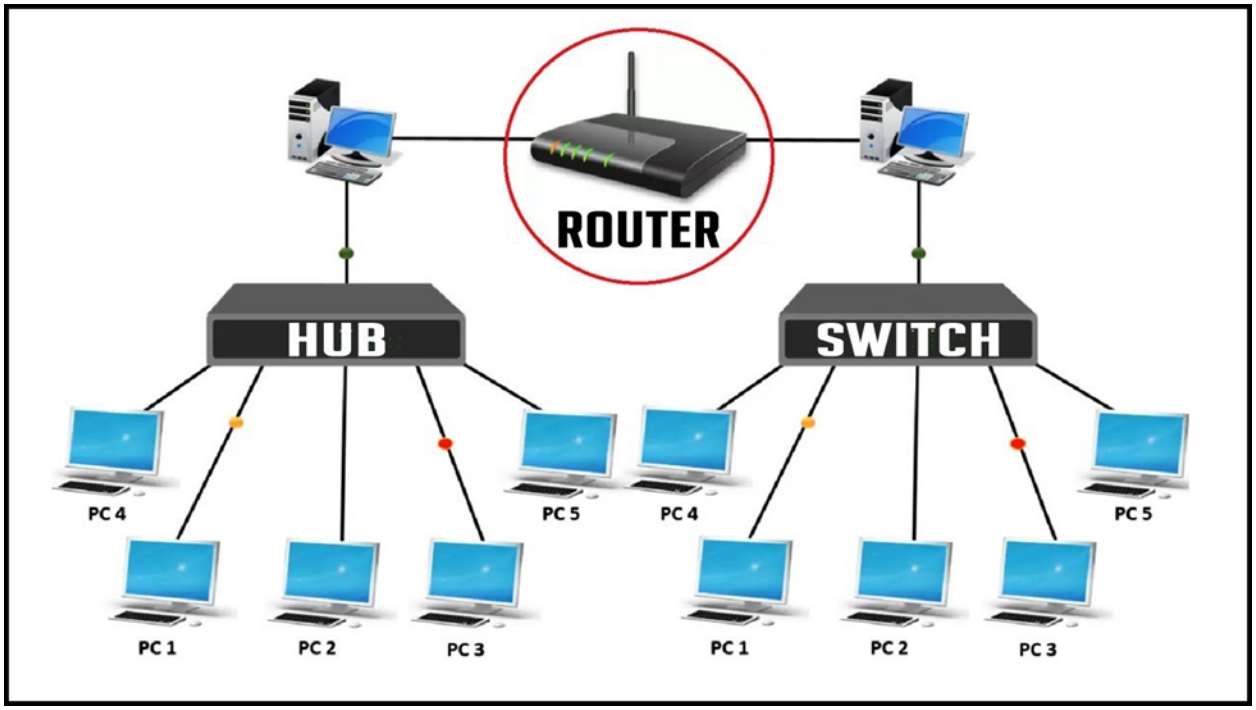
- There are 2 types of servers that will be used, they are web servers and file servers.
- Web servers – It is very important that the web server performs well so it can deliver website content to the users as quickly as possible.
- File servers – It can easily access all the files from one central location.

4. For every workstation, what is the standard software that will be needed?

- For browsing purposes, Microsoft Edge, Google Chrome and Mozilla Firefox will be used.
- For basic documentation purposes, Microsoft Office 2019 – Word, Excel and PowerPoint will be used.
- For source code editing purposes, Visual Studio Code will be used.
- For editing and reading PDF files, Adobe Acrobat DC Pro will be used.

5. What devices are needed to construct the network infrastructure?

- Routers to connect to the switches or hubs that will be used.
- Switches/Hubs to connect with all the computers in each lab.



6. What are the factors that must be considered when building a network that is reliable, secure and runs smoothly?

- embedded security measures
- standardization of software and hardware
- network resiliency
- redundancy

7. What type of physical media is used for the network plan?

- Wireless because wireless networks enable multiple devices to use the same internet connection remotely, as well as share files and other resources.
- Increase mobility by allowing users to roam around the place without getting disconnected from the network.

8. What type of antivirus needs to be installed on each PC?

- Norton 360 with LifeLock
- PC protections including firewall and backup
- Excellent malware protection
- Password manager
- LifeLock identity theft protection with most 360 packages

9. Which network topology do you use to connect computers in a building?

- A star topology is the one in which each peripheral node is connected to a central hub or switch.
- It is probably the most commonly used network topology for LAN because it is considered the easiest topology to design and implement.
- The central hub functions as the server for the peripheral nodes or clients

10. Are there any CLOUD services used in computers?

- Yes
- With cloud computing, we're enabled to host data on the cloud, freeing up space that would've gone into storing hardware and machines space.
- Cloud computing can save money, space and time for a laboratory.

11. What are the main specifications of computers in every lab?

- Operating System: Microsoft Windows 10 x64
- Processor (CPU): Intel Core i5 (6th generation or newer)
- Memory: 16GB RAM
- Storage: 500GB internal hard drive
- Display: 15" LCD monitor
- Network Adapter: 802.11ac 2.4/5 GHz wireless adapter
- Others: Webcam, lock, external drive for backups

12. What type of protocol is used in computer networks?

- TCP
- It organizes data in a way that ensures the secure transmission between the server and client.
- It guarantees the integrity of data sent over the network, regardless of the amount.
- For this reason, it is used to transmit data from other higher-level protocols that require all transmitted data to arrive.

Feasibility Study

Nowadays, the Internet continues to play an important role in society and the nation. With the current rate of growth, the internet infrastructure must also be updated to keep up with these developments. Therefore, this proposal paper suggests a network architecture and an overall floor plan to accommodate the new building to be built at the Faculty of Computing, which will include several high-tech workspaces that will be supported by this infrastructure. The proposed project's goals are to facilitate this early planning by providing secured network services, better information processing systems, regular maintenance, future scalability, and a high-speed network. Moreover, the physical safety and security of the structure are built to satisfy the previously stated operating goals.

Focusing on the project's goal one by one, we aim to deliver secured network services that are available to all building users. This involves providing a protected professional computing environment to the Faculty of Computing building through the implementation of trusted security software. It is meant to be completely functional and largely inaccessible to anyone who does not possess the system's identification. In addition, it defends against network intrusions caused by e-business application attacks, denial-of-service attacks, and Internet Worms. This approach may reduce the risk of unapproved ingestion by outsiders, which can compromise network security.

Furthermore, in order to support education in accordance with the 4th industrial revolution, we want to improve information processing systems by utilizing the core network to transport network traffic at high speeds. Since there are huge numbers of device users in the building, the network may become slower and more congested. This can allow for the separation of multiple users, which simplifies traffic management, access control, and security monitoring.

Meanwhile, maintenance should be done at regular intervals, plus a main system admin and IT support in charge of the whole system and structure on a daily basis. Network and system failure are inevitable but the casualty and inconvenience can be minimized through fast report and action. The building itself is set up based on Local Area Network connection. Thus cables, routers and modems must be ensured to always be in a good condition. The components have to be designed so that they can be easily replaced in any case of unexpected failure or downturn during an emergency.

Scalability is one of the major concerns in a project especially since technology is improving at a very fast pace, so the building has to be modular enough to be able to support the changes easily. Hence, during our initial planning we have been trying to design the building and system structure in a modular way so that the structures can sustain for a long period of time while still supporting new technology units.

Considering this is an academic building for the Faculty of Computing which requires high collaboration either physically or remotely, it must have a high speed network. This is because computing subjects highly require hands-on and practicality on computational software and network structure in which using laptop and computer is a routine in every subject. Therefore, it also goes without saying that the building network has to be able to support high amounts of data and resource sharing and connectivity happening at the same time.

Last but not least, physical safety and security is also a must in this project. Other than the usual door lock security, fire prevention system, elevator emergency system, emergency lighting are also essential for a building. For this Faculty of Computing building which has high focus and high dependency on electronic devices, an automatic cut-off system for devices and electricity is also needed to minimize the casualty in case of any faulty device. The server must only be accessible through controlled doors as part of physical access controls.

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MEETING MINUTES

1st Meeting

DATE : 7/11/2022 (MONDAY)
TIME : 6.00 PM - 7.00 PM

ATTENDEES: LIM JIE HAN
: LOKE RUI KEE
: MALLEYLENE PENEH
: JELIZA JUSTINE A/P SEBASTIN

LOCATION : ONLINE - GOOGLE MEET

GOAL : FOCUS ON COMPLETING THE TASK 2

DISCUSSION NOTES :

1). Firstly, the task leader (Lim Jie Han) gave a briefing for task 2, what the task was about, and the deliverables that need to be obtained.

2). Then, the meeting continued with task allocation. Each pair was given a day to complete their part.

Task allocation

Question and Answers (6 Q&A/person)	Lim Jie Han Jeliza Justine A/P Sebastin
Feasibility and Reasoning	Loke Rui Kee Malleylene Peneh

Adjournment at 7.00pm.
Next meeting is scheduled on 8/11/2022 (Tuesday) at 10.00pm.

2nd Meeting

DATE : 8/11/2022 (TUESDAY)
TIME : 10.00 PM - 10.45 PM

ATTENDEES: LIM JIE HAN
: LOKE RUI KEE
: MALLEYLENE PENEH
: JELIZA JUSTINE A/P SEBASTIN

LOCATION : ONLINE - GOOGLE MEET

GOAL : FOCUS ON COMPLETING THE TASK 2

DISCUSSION NOTES :

1). Firstly, each member updated their progress. Then, they reviewed their own part and others' parts.

2). Then, the members had a discussion to improve their respective tasks.

3). After that, the team has decided to complete the remaining tasks and set a time for all of us to review it before the submission.

Adjournment at 10.45pm.