



UTM

UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF ENGINEERING

SCHOOL OF COMPUTING

SECR1213-03

NETWORK COMMUNICATIONS

PROJECT - TASK 5

GROUP G

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INTRODUCTION

The **IP address assigned** to our group is 172.18.5.0/18. The information we can obtain here is that the notation is /18, which means the **subnet mask** is 255.255.192.0. By doing the AND operation on the given IP address, 172.18.5.0 and the subnet mask, we can get our network address which is 172.18.0.0 and we change the binary bit starting from the 19th bit onwards to 1 (count from left to right) we will get our broadcast address, which is 172.18.63.255. Hence, a small conclusion we can get from here is that the usable or available IP address for us to assign to the end host ranges from 172.18.0.1 to 172.18.63.254. But since the IP address assigned to us is 172.18.5.0, the **available IP address** for us to assign to the end host ranges from 172.18.5.1 to 172.18.63.254, with **network address** of 172.18.5.0 and **broadcast address** of 172.18.63.255.

Subnet Mask	Network Address	Broadcast Address	Available Address
255.255.192.0	172.18.5.0	172.18.63.255	172.18.5.1 - 172.18.63.254

But the real question is that, how do we distribute the IP addresses by following the needs of each work area. At the ground floor, there is a maximum of 16 end devices (each video conferencing room AKA vc room contributes 8) plus one wireless access point; whereas at the first floor we have 32 end devices in each lab, in which we have a total of 4 labs, plus a wireless access point. Meanwhile on the first floor we have 4 labs with 31 workstations (including students' and lecturers') and 1 multi-terabyte storage server located in each room. That resulted to 128 connection.

GROUND FLOOR

After a discussion among our group members, we decided to use the notation of /28 on the ground floor in each vc room. The **subnet mask** will be 255.255.255.240. The reason why we do this is that /28 will provide us 16 addresses, in which it can accept 16 on each subnet. So the end device of the **first vc room** will have an **IP address ranging** from 172.18.5.1 to 172.18.5.14 with a **network address** of 172.18.5.0 and **broadcast address** of 172.18.5.15. Next up, the **second vc room** will have an **IP address ranging** from 172.18.5.17 to 172.18.5.30 with a **network address** of 172.18.5.16 and **broadcast address** of 172.18.5.31. The **wireless access point** will be using the default IP address assigned to it. The detail of network topology is shown in **Figure 1**.

Room	End Devices	Subnet Mask	IP Address Range	Broadcast Address	Network Address
First VC	8	255.255.255.240	172.18.5.1 - 172.18.5.14	172.18.5.15	172.18.5.0
Second VC	8		172.18.5.17 - 172.18.5.30	172.18.5.31	172.18.5.16

FIRST FLOOR

The subnet mask for each lab will be 255.255.255.192. The reason why we choose the subnet mask because /26 will provide 64 address. The end device of the **general purpose lab** will have the **IP address ranging** from 172.18.6.1 to 172.18.6.63 with the **network address** of 172.18.6.0 and **broadcast address** of 172.18.6.64. The **computer security lab** room will have the **IP address ranging** from 172.18.6.66 to 172.18.6.127 with the **network address** of 172.18.6.65 and **broadcast address** of 172.18.6.128. Next is the **IOT lab** that will have the **IP address ranging** from 172.18.6.130 to 172.18.6.191 with the **network address** of 172.18.6.129 and **broadcast address** 172.18.6.192. Finally, the **network lab** will have the **IP range** of 172.18.6.194 to 172.18.6.255 with the **network address** of 172.18.6.193 and **broadcast address** of 172.18.7.0. The detail of network topology is shown in **Figure 1**.

Room	End Devices	Subnet Mask	IP Address Range	Broadcast Address	Network Address
General Purpose Lab	32	255.255.255.192	172.18.6.1 - 172.18.6.63	172.18.6.64	172.18.6.0
Computer Security Lab	32	255.255.255.192	172.18.6.66 - 172.18.6.127	172.18.6.128	172.18.6.65
IOT Lab	32	255.255.255.192	172.18.6.130 - 172.18.6.191	172.18.6.192	172.18.6.129
Network Lab	32	255.255.255.192	172.18.6.194 - 172.18.6.255	172.18.7.0	172.18.6.193

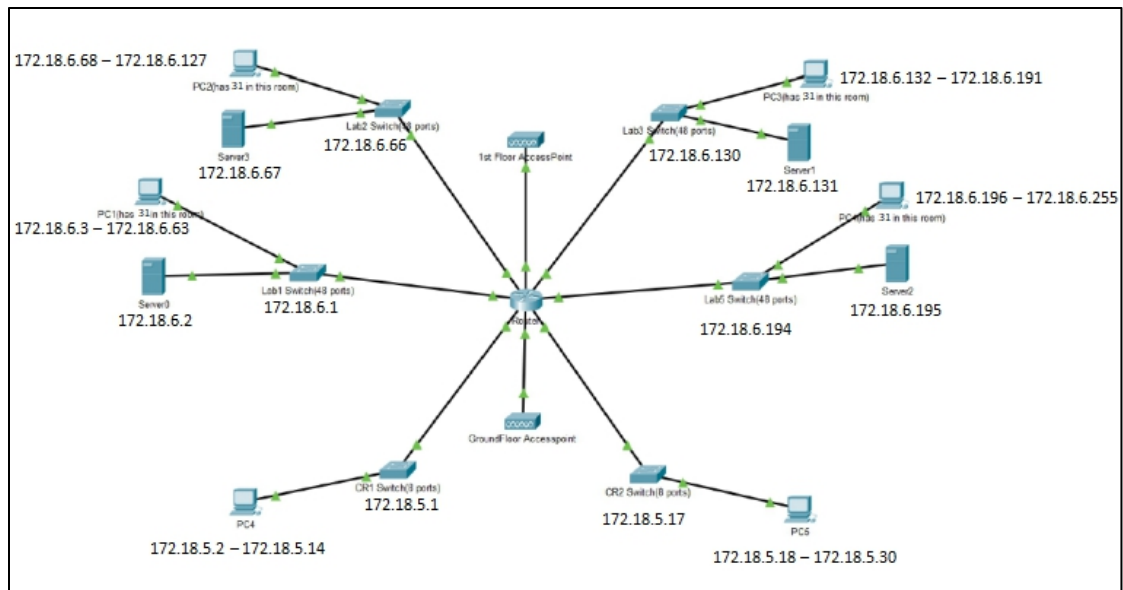


Figure 1