

PROJECT COMPNET SECR2242

Introduction

This project is a group project with individual review. Its objective is to bring forth what you have learned in class into how it is in the real world. This project is a continuance from the Network Communication project from your previous semester. In this course, your project is to virtualize the project using Packet Tracer.

Your tasks will include building a small network with different components, namely:

- Creating the topology of the building in Packet Tracer.
- Calculating and applying network IP addressing
- Implementing routing protocols (both static and dynamic)
- Applying VLAN and DHCP
- Reporting your work

It is very important that you read this document carefully and follow the due dates and deliverables to get good marks. Ask if you do not understand something, and do not wait until the last minute to do so.

Task 1: Project Setup [10 Marks]

In this task, you are to create your own team. Choose people who can contribute and work well and hard. A good team can mean a better quality of work and, as a result, a better grade.

Excerpts (with a little amendment):

“To facilitate this growth, SC plans to build a new 2–storey building. This new building will house four new labs, and two video conferencing rooms, for virtual project meetings. These video conferencing rooms will have 2 workstations each. The labs are divided into: 1 general purpose lab [31 workstations], 1 Computer Security lab [25 workstations], 1 Network lab [32 workstations], and 1 IOT lab [25 workstations].”

a) Create a group of **FOUR** students per group and come up with a group name.

b) Go through your Network Communication project design, and choose one. If you did not take Network Communication last semester (due to credit transfer), then choose from your friends.*Note: You can edit the previous floor plan.

Deliverables:

- A report that include:
 - Group name and members,
 - The floor plan chosen (*with the changes you decided as a group).
 - Add meeting minutes for this portion in Appendix

Due:

Week 2 - Thursday 30 March 2023, before 4pm. Submit a PDF file to e-learning. Only one submission per group. **Report MUST follow good report writing practices.**

Task 2: Topology Setup in Packet Tracer [10 Marks]

In this task, you are to create your project topology in Packet Tracer. This will mean using the Cisco hardware available in Packet Tracer to do so. ****Note: for the sake of clarity, only have 4 hosts per lab in the Packet Tracer. This is to avoid clutter.***

Deliverables:

- Chosen project plan in Packet Tracer.
- Add meeting minutes for this portion in Appendix

Due:

Week 3 - Thursday 6 April 2023, before 4pm. Submit a .pkt file to e-learning. Only one submission per group.

Task 3: Addressing the topology [10 Marks]

In this task, you will be assigning the IP addressing to the topology. It is important to ensure that all hosts receives an IP address and can connect to the network without conflict of addresses. You will be assigned a network address from your lecturer.

Deliverables:

- A report showing the **complete and detailed workings** of your subnetting and IP assignation to each hosts/device in the topology as required. **Note: if you use any form of subnet calculators, marks will be deducted.*
- Add meeting minutes for this portion in Appendix

Due:

Week 4 - Thursday 13 April 2023, before 4pm. Submit a PDF report to e-learning. Only one submission per group. **Report MUST follow good report writing practices.**

Task 4: Implementing routing protocols [10 Marks]

In this task, you will be implementing routing protocols, both static and dynamic, as appropriate. The goal here that routing is enabled and you can successfully ping from host in one subnet to a host in another subnet.

Deliverables:

- A report detailing where you configured the static and dynamic routes. This is to be shown in 2 ways:
 - Markings on the topology. **On the image of the topology, highlight the routes.*
 - With the content of the routing table from ALL the routers in the topology.
 - Add meeting minutes for this portion in Appendix
- The .pkt file of the topology and its configurations.

Due:

Week 8 - Thursday 11 May 2023, before 4pm. Submit a PDF report and a .pkt file to e-learning. Only one submission per group. **Report MUST follow good report writing practices.**

Task 5: Implementing VLANs [10 Marks]

In this task, you will be implementing VLANs. To your current plan, add 2 rooms for staff on each floor. These rooms will belong to their own subnet, so assign a new subnet from the IP addressing remains. *Note: Make sure that end-to-end connectivity is there.

Deliverables:

- A report detailing VLAN configuration and addressing. Also, show the VLAN table on the router and switch.
 - Add meeting minutes for this portion in Appendix
- The .pkt file of the topology and its latest configurations.

Due:

Week 11 - Thursday 1 June 2023, before 4pm. Submit a PDF report and a .pkt file to e-learning. Only one submission per group. **Report MUST follow good report writing practices.**

Task 6: Implementing DHCP [10 Marks]

In this task, you will be implementing DHCP. Make sure all the hosts for the labs are assigned an IP address with DHCP instead of static assignment.

Deliverables:

- A report detailing DHCP configuration and examples of it workings.
 - Add meeting minutes for this portion in Appendix
- The .pkt file of the topology and its latest configurations.

Due:

Week 14 - Thursday 22 June 2023, before 4pm. Submit a PDF report and a .pkt file to e-learning. Only one submission per group. **Report MUST follow good report writing practices.**

Task 7: Documentation and reflection [20 Marks]

In this task, you will be preparing a documentation in 2 forms – a group report and an individual report. The objective of the report is to report the work done and reflect upon it (both the work and what you have learned). You will be given a guideline for the reports but you are advised to expand it to give a clearer view of your work, your suggestions and your reflections.

Report format include: Times New Roman 12 font, 1.5 spacing, numbering for each task,

Deliverables: (*For reports, follow the guideline given)

- Task 7a:
 - A group report detailing your work and reflection.
 - The final .pkt file of the topology and its latest configurations.
- Task 7b:
 - A personal report on project, what you learned and team work.

Due:

Week 15 - Thursday 29 June 2023, before 4pm. Submit a PDF report and a .pkt file to e-learning. Only one submission per group.

Task 7a: MAKING A GROUP REPORT [15 Marks]

This report is a professional report to highlight your team, your results, your suggestions and reflection of your work.

Table 1: Group Report Outline

Item	Description
Title page	Use this as title on cover " Network Operations Virtualization for School of Computing Block N28B ". Add a by (your group name).
Table of Contents	List the contents of your report here. This helps readers to know where exactly the content they are looking for is.
Table of Figures	List all the figures (Figure number, figure title, page) for easy reference.
Introduction	<ul style="list-style-type: none">• A good introduction should tell the reader what the project is about in general terms.• You should also outline the aims, scope and objective of the project.• You should also include assumptions on which the work is based on (if any).
A compiled solutions of Task 1-6.	Here you put in all your results from the previous tasks. <u>Include your reflection of each individual task as well.</u> <i>*reflection here is on things were done (in the task), and how it can be made better.</i>
Conclusion.	Describe your achievements, strength and weaknesses. Give suggestions for project improvement.
Team Members and responsibilities	Introduce team members and each of their responsibility. Also, refer to meeting minutes in appendix.
References: It is important that you give proper credit to all work that is not	Include:

<i>strictly your own, and that you do not violate copyright restrictions.</i>	<ul style="list-style-type: none"> - All articles, books, journals etc. that you have referred in order to do and complete your work. - References will follow the APA style (refer here for info: https://www.scribbr.com/category/apa-style/)
Appendices.	Include: <ul style="list-style-type: none"> - Meeting minutes - Pictures of your team working on the project (ex. Screenshots of video meetings, WA discussion, etc.) - Figures, tables and images (if need be)

Task 7b: MAKING AN INDIVIDUAL REPORT [5 Marks]

This report is **individual and unique**. It MUST be your own individual point of view. It **does not need to be submitted together** with the group report, but you must submit it. You must describe your contributions in the project work, as well the contributions of others in your team. **Be honest**. This is where your integrity comes in.

The report is two pages long (maximum). The report must include the following:

- Your group name.
- Detail your contribution to the group and the project work
- Detail each of the other members' contribution to the group and the project work
- Explain how you work as a group.
- Explain what you have learned from working as a group.
- Explain what you have learned from doing the project.
- Your comments and suggestions on the project.

FINAL THOUGHTS

Here are some advice for you to use during this project.

TASKS: It is easy to put things to the last minute when you have a few things to do at once. Time management is important here. If you push things to the last minute – your marks will reflect your work. Shoddy work = shoddy marks.

TEAMWORK: You work as a team. It does not mean that some do the work and others just coast and do nothing. Get your hands into everything, as this is how you learn. The project is designed to help you learn.

TEAMWORK: Sometimes it is hard when your teammates do not want to work hard and you end up with a major chunk of the work. Write this in your individual report. Also, talk to your lecturer about this.

REPORT: It is easy to copy and paste existing work from the Internet. However, that, especially without proper citation, is known as PLAGIARISM in the academic world. Plagiarism can result in you getting zero marks – or even a disciplinary action. It is best to stay away from plagiarism.

REPORT: With reports, you are reporting what you did. Do just that – so that the reader may understand everything that you did. And understand the reason to why you did it that way. Problems arise when you did not do the work (the research, the reading, the calculating, the writing, etc.)

DELIVERABLES: E-learning records the time you submit your work. Lecturers can see if you were late in submission. The time provided here (for due date) is the server time, not according to your watch. Please remember that.

MARKING RUBRICS: The project document has highlighted the content to be submitted and its criteria. Read it carefully and ask when you do not understand.

IP ADDRESSING SCHEME

Each section will have 172.168.X.0/23 as their network address. An example is given below.

Group	Network Address
1	172.16.16.0/23
2	172.16.18.0/23
3	172.16.20.0/23
4	172.16.22.0/23
5	172.16.24.0/23
6	172.16.26.0/23
7	172.16.28.0/23
8	172.16.30.0/23
9	172.16.32.0/23
10	172.16.34.0/23