**Student Name……ashish thapa…………………**

**Student ID:……………………4559012……**

**Program:** Computer programming **Course:** Network Security and Large Data Solutions

**Percentage:** 15% **Due:**

**Duration:** 90 minutes

# Requirements

1. The students must be in the class to do the lab

2. Capture the whole screen that shows time and date. Any capture does not include it will have 0 point. Below is an example of the screenshot:

A screenshot of a computer

Description automatically generated

3. There are some screenshots that require your first name and last name. If any of those ones does not have your name, then the whole lab will be 0.

4. When you submit your lab, make sure to include your first and last name in the file name

# Important Note

1. The students can follow the instruction step by step to do the lab, however the steps might have minor changes that depend on the version/edition of the software. In such case, students must find out your own steps without asking instructor

2. Make sure the VM name and the hostname of guest OS you create that must include your first and last name. If you fail on it and use other students screenshots, you will get 0 immediately.

# Lab 1.1 – Configure Windows Firewall Access Policy

# Objectives

Part 1: Prepare a VM Windows 10 with Google Chrome web browser

Part 2: Perform Firewall policy to block port 80 and 443

Part 3: Perform Firewall policy to prevent Chrome only from using to browse to Internet

# Required Resources

* A VM for Windows client with a minimum of CPU 1 core, 4 GB of RAM and 12 GB of free disk space.
* VMware Workstation Player, Oracle Virtualbox or any other software that meet NCT policy and your own convenience. This lab guide is based on VMware.
* Student USB storage device with a minimum capacity of 128GB formatted as NTFS.

# Instructions

## Prepare a VM Windows 10, and Google Chrome web brower. The VM name and host name of guest OS must include your first and last name.

### Download and install Google Chrome browser

If the lab Windows 10 is not installed the Google Chrome

Make sure you can access NCT student portal: <https://login.niagaracollegetoronto.ca/oauth/v2/auth_login> . This is a mandatory step.

## Perform Firewall policy to block port 80 and 443

The purpose of the activity is to prevent users from web browsing. So, by denying port 80 and 443 will help to block the majority of websites. However, there are some websites do not allocate two those port, then users can access it properly.

### Configure outbound policy to block port 80 and 443

* + - 1. Go to Windows search box, perform the search to open **Windows Defender Firewall with Advanced Security**
      2. Go to **Outbound Rules**, **Actions**, and create a **New Rule…**

Go to **Port** option, and then the box to **Specific remote ports**

Enter the value 80, 443 to the box

The action should be **Block the connection**. And the rule needs to apply for **Domain**, **Private** and **Public** mode

Name the rule is **Student NCT ID xxxxxxx - Block port 80 and 443 for access Internet**

Ex:my name is Harry Nguyen and my student ID is 1234567, the rule name must be **Student NCT ID 1234567 - Block port 80 and 443 for access Internet**

Click on **Finish**

* + - 1. Validation the access by go to Outbound Rules. You will see the list of all the rules.

Double click to open your above rule, and then go to the tab **Protocols and Ports**

[Take a screenshot 01 of the output windows and paste it here]

A screenshot of a computer

AI-generated content may be incorrect.

The screenshot 01 to validate whether the name of the rule is correct with correct Student ID information as well as the access policy for the TCP port protocol

* + - 1. Open the web browser Chrome and validate the access to NCT student website portal <https://login.niagaracollegetoronto.ca/oauth/v2/auth_login>

[Take a screenshot 02 of the output windows and paste it here]

A screenshot of a computer

AI-generated content may be incorrect.

The screenshot 02 to validate whether the website now is accessible or not

### Validate the access to google.ca

* + - 1. Go to website <https://www.google.ca/> and answer the question
      2. Do you have access to google.ca website? Yes or No? (This is Yes/No question)

[Reflection question 01: Write your answer 01 here]

Yes

Either Yes or No, can you explain the reason why?

[Reflection question 02: Write your answer 02 here]

The Firewall focus on TCP traffic due to which It can’t intercept the QUIC connection which basically rely on UDP. So, this is the cause we can use google.ca but not the Niagara login portal.

Appropriate explanation for the reason why.

* + - 1. Right click on the rule and **Delete**

Make sure to select Yes to confirm the deletion.

A screenshot of a computer error

Description automatically generated

## Perform Firewall policy to prevent Chrome only from connecting to Internet

### Configure outbound policy to prevent Chrome only from connecting to Internet

* + - 1. Follow the same steps in Part 1 – Step 1 open **Windows Defender Firewall with Advanced Security**
      2. Go to **Outbound Rules**, **Actions**, and create a **New Rule…**

Go to **Program** option, and then the box to **This program path:**

**Browse…** to chrome.exe file with directory location below

A screenshot of a computer

Description automatically generated

The action should be **Block the connection**. And the rule needs to apply for **Domain**, **Private** and **Public** mode

Name the rule is **Student NCT ID xxxxxxx - Block Chrome only from connecting to Internet**

Ex:my name is Harry Nguyen and my student ID is 1234567, the rule name must be **Student NCT ID 1234567 - Block Chrome only from connecting to Internet**

Click on **Finish**

* + - 1. Validation the access by go to Outbound Rules. You will see the list of all the rules.

Double click to open your above rule, and then go to the tab **Programs and Services**

[Take a screenshot 03 of the output windows and paste it here]

A screenshot of a computer

AI-generated content may be incorrect.

The screenshot 03 to validate whether the name of the rule is correct with correct Student ID information as well as the access policy for the program google.exe

* + - 1. Open the web browser Chrome and validate the access to NCT student website portal <https://login.niagaracollegetoronto.ca/oauth/v2/auth_login>

[Take a screenshot 04 of the output windows and paste it here]

A screenshot of a computer

AI-generated content may be incorrect.

The screenshot 04 to validate whether the website is accessible or not via Google Chrome

* + - 1. Open the web browser Microsoft Edge and validate the access to NCT student website portal <https://login.niagaracollegetoronto.ca/oauth/v2/auth_login>

[Take a screenshot 05 of the output windows and paste it here]

A screenshot of a computer

AI-generated content may be incorrect.

The screenshot 05 to validate whether the website is accessible or not via Edge

* + - 1. Right click on the rule and **Delete**

Make sure to select Yes to confirm the deletion.

A screenshot of a computer error

Description automatically generated

# Lab 1.2 – Examine digial cerfificate

# Objectives

Part 1: Guest OS Windows 10 with Internet Connection

Part 2: Certificate validation

# Required Resources

* A VM for Windows client with a minimum of CPU 1 core, 4 GB of RAM and 12 GB of free disk space.
* VMware Workstation Player, Oracle Virtualbox or any other software that meet NCT policy and your own convenience. This lab guide is based on VMware.
* Student USB storage device with a minimum capacity of 128GB formatted as NTFS.

## Part 1: Prepare a VM Windows 10 with Internet access

## Make sure guest OS Windows has Internet

Perform the command **ping 8.8.8.8** and **ping** **google.ca** to validate Internet connection. If your Windows does not have Internet, you must troubleshoot and resume the connection.

[Take a screenshot 06 of the output windows and paste it here]

A screenshot of a computer

AI-generated content may be incorrect.

The screenshot 06 to validate the access to website google.ca

### Part 2: Examine the information

### Go to the website google.ca and open Certificate page/information

Examine, answer the questions for google.ca and all its subdomain:

a. What is the name of oragnization who issue the certificate?

[Reflection question 03: Write your answer 03 here]

Google Trust Service

When will the certificate exipre?

[Reflection question 04: Write your answer 04 here]

Tuesday, September 9, 2025 at 4:03:58 PM

b. About public key information**,** How many bit has been used for public key?

[Reflection question 05: Write your answer 05 here]

2048

And, what is the name of mathematical algorithm?

[Reflection question 06: Write your answer 06 here]

Elliptic Curve Public Key

your answers here.

Acknowledgement:

My name is …………………Ashish Thapa……………………………………………………………………………………

I understand the lab rules and grading point calculation and I will strictly follow it.

Signature: ………………Ashish……………………….. Date:……………2025-07-08……………………

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