INFO 3605 – Fundamentals of LAN Technologies (2023/2024 Semester I)

Assignment 1

Date Given: **2023/09/19**

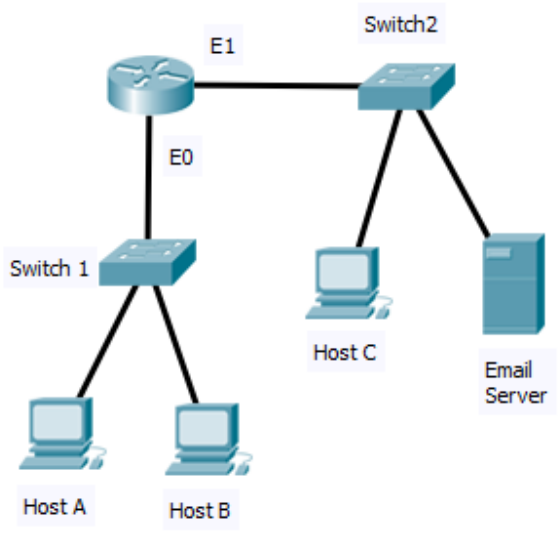
The percentage towards coursework: **10%**

This is an individual assignment, no group work. Discussions and questions can be done in the forum.

This assignment is out of **100** marks.

The assignment is due at midnight **Saturday 7th October 2023**

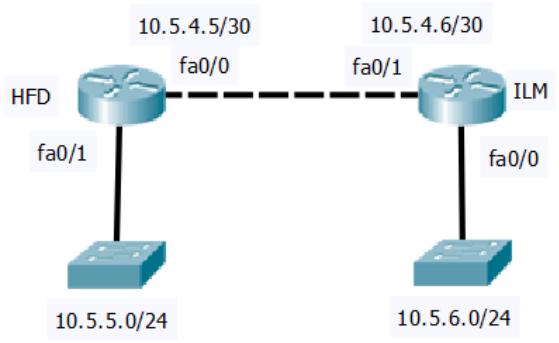
1) Which destination addresses will be used by Host A to send data to Host C? (Choose two and explain why).



A. the IP address of Switch 1
B. the MAC address of Switch 1
C. the IP address of Host C
D. the MAC address of Host C
E. the IP address of the router's E0 interface
F. the MAC address of the router's E0 interface

[4 marks]

2) Refer to the graphic. A static route to the 10.5.6.0/24 network is to be configured on the HFD router. Which commands will accomplish this? (Choose two and explain why).



A. HFD (config) #ip route 10.5.6.0 0.0.0.255 fa0/0
B. HFD(config)# ip route 10.5.6.0 0.0.0.255 10.5.4.6
C. HFD(config)# ip route 10.5.6.0 255.255.255.0 fa0/0
D. HFD(config)# ip route 10.5.6.0 255.255.255.0 10.5.4.6
E. HFD(config)# ip route 10.5.4.6 0.0.0.255 10.5.6.0
F. HFD(config)# ip route 10.5.4.6 255.255.255.0 10.5.6.0

[4 marks]

3) Using the GNS3 diagram, the networks listed and the following notes:

Pre-GNS3 notes: You **MUST** ensure the GNS3 has the required routers installed **BEFORE** opening the project file. Use "**Required GNS3 IOS files.txt**" for guidance. If everything works, there will be no errors when opening the project file.

Notes:

- Each router must have IP addresses configured for ALL the respective networks.
- The interfaces on the routers to each of the website networks are already configured (green).
- Use your discretion when allocating which IPs to which hosts and router interfaces.
- Each switch is on a separate network and connected to a separate interface on the router.
- DNS 8.8.8.8 resolves access to www.google.com (already configured).
- DNS 1.1.1.1 resolves access to www.mozilla.org (already configured).
- LondonServer, PC0, PC2 will use DNS server 8.8.8.8.
- PC1, PC3 will use DNS server 1.1.1.1.

a) Create a word document (to save your answers) with the following details:
   i) Name: **INFO 3605 - Assignment 1 - [INDUMBER].docx**
b) Fill out the tables below with your IP and network details **[7 marks]**
c) Download the "**INFO 3605 - Assignment 1 - Static Routing**" zipped GNS3 project file;
   i) Make a copy of the project folder and append your ID number to the filename,
   ii) Open in GNS3 and perform the following [**Some device/network IP addresses are listed in the diagram as part of the interface labels**]:

(1) Configure **R1** interfaces (record commands used in word document) **[5 marks**]
(2) Configure **London** interfaces (record commands used in word document) **[5 marks**]
(3) Configure **Manchester** interfaces (record commands used in word document)**[5 marks**]
(4) Configure **R2** interfaces (record commands used in word document) **[5 marks**]
(5) Save your configurations for each router (record command in word doc). **[4 marks]**

iii) Configure each of the PCs/Server with their respective IP addresses, gateways and DNS servers. The IP addresses can be any value, once it's in the correct network. The network information is listed in the diagram.
(1) Include a screenshot in your word document showing the IP address configured for each PC/Server (5 screenshots in total). **[5 marks]**

iv) For the static routing perform the following:
(1) Configure static routing for **R1** to access each of the respective networks including access to the two DNS servers. **[8 marks]**
(2) Configure static routing for **London** to access each of the respective networks including access to the two DNS servers. **[8 marks]**
(3) Configure static routing for **Manchester** to access each of the respective networks including access to the two DNS servers. **[8 marks]**
(4) Configure static routing for **R2** to access each of the respective networks including access to the two DNS servers. **[8 marks]**
(5) Save your configurations for each router (record command in word doc). **[4 marks]**

v) From each of the PCs and server,
(1) Ping both webservers, record the commands used. **[5 marks]**
(2) Why were some of the websites not reachable? **[4 marks]**
(3) Ping both websites using their ip address, record the commands used. **[5 marks]**
(4) Was this able to work and why? **[2 marks]**
(5) What would be a possible solution to resolve this? **[4 marks]**

vi) **Save as** your GNS3 project to make a backup, then use **save a**s to make another copy of the project to implement your solution stated in 3) c) v) (5) above. **[OPTIONAL]**

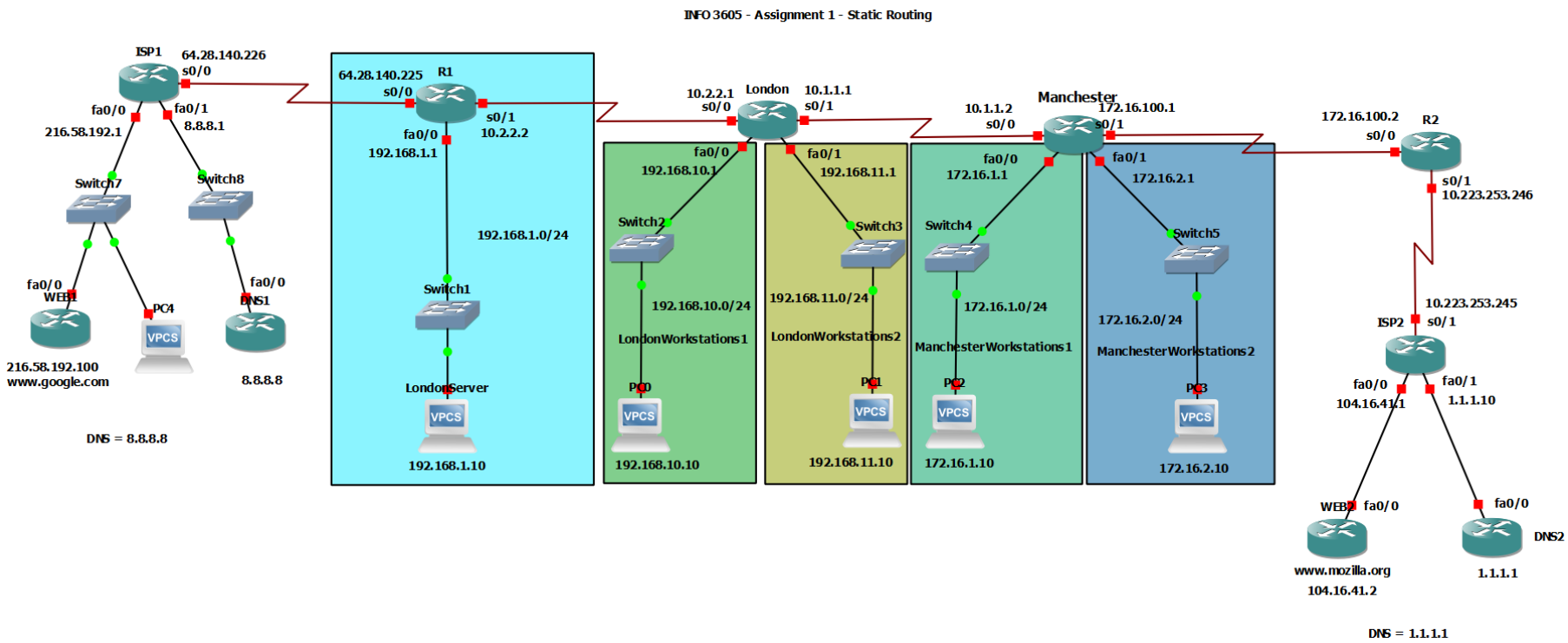
Assignment Notes

- The assignment is expected to contain a large number of pages due to screenshots.
- The assignment is due **two weeks** from the date of issue.
- All files should be **exported** and **zipped** with the filename in the following format: **INFO3605 - Assignment 1 – [id number].zip**. Submission is done via **My eLearning Assignment 1** submission page.
- Full internet research may be required and be sure to cite your sources using http://www.citationmachine.net/ (recommended for this assignment) or https://www.zotero.org/ (more complex) or EndNote (http://libguides.uwi.edu/endnotex7, also complex) and also to create your list of references and/or bibliography.
- Plagiarism will **NOT** be tolerated:
  - https://sta.uwi.edu/resources/policies/Anti-Plagiarism.pdf .

- https://sta.uwi.edu/resources/documents/postgrad/Policy_plagiarism.pdf .

/ns

Network Diagram



IP Addressing and Networks

IP Addresses on interfaces for computers and routers facing the computer networks.

Name	Interface	IP Address	Subnet Mask	Network Address	Broadcast Address	Gateway	DNS
London Server							
R1							
PC0							
London							
PC1							
London							
PC2							
Manchester							
PC3							
Manchester							

IP Addresses on interfaces for the routers (some information will be duplicated from above).

Name	Interface	IP Address	Subnet Mask	Network Address	Broadcast Address	Comments
R1						
R1						
R1						
London						
London						
London						
London						
Manchester						
Manchester						
Manchester						
Manchester						

R2						
R2						

All possible networks in the diagram. Information will be used when setting up routes.

No.	Name	Network Address	Subnet Mask	Broadcast Address	Comments
1	DNS 8.8.8.8 Network				
2	www.google.com Network				
3	DNS 1.1.1.1 Network				
4	www.mozilla.org Network				
5	R1 to ISP1 network				
6	R2 to ISP2 Network				
7	R1 router to LondonServer Network				
8	R1 router to London Router Network				
9	London router to London Workstations1 Network				
10	London router to London Workstation2 Network				
11	London router to Manchester Router Network				
12	Manchester router to Manchester Workstations1 Network				
13	Manchester router to Workstations2 Network				
14	Manchester router to R2 Router Network				

Commands Used

[*used this as an example to place your commands*]