



**DALHOUSIE
UNIVERSITY**

**Network Security
(CSCI-6708)**

Assignment - 1

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Exercise 1:

- HTTP connection from H1 to H8 (H1 is the client and H8 is the server).

- h1, r11, H1, H8, 50000, 80, data (Network 2)
- r12, r21, H1, H8, 50000, 80, data (Network 3)
- r22, r31, H1, H8, 50000, 80, data (Network 4)
- r32, h8, H1, H8, 50000, 80, data (Network 1)

- HTTP reply message from H8 to H1.

- h8, r32, H8, H1, 80, 50000, data (Network 1)
- r31, r22, H8, H1, 80, 50000, data (Network 4)
- r21, r12, H8, H1, 80, 50000, data (Network 3)
- r11, h1, H8, H1, 80, 50000, data (Network 2)

- SSH request message from H6 to H3.

- h6, r12, H6, H3, 51000, 22, data (Network 3)
- r11, h3, H6, H3, 51000, 22, data (Network 2)

- SSH reply message from H3 to H6.

- h3, r11, H3, H6, 22, 51000, data (Network 2)
- r12, h6, H3, H6, 22, 51000, data (Network 3)

- FTP request message from H8 to H1.

- h8, r32, H8, H1, 20, 52000, data (Network 1)
- r31, r22, H8, H1, 20, 52000, data (Network 4)
- r21, r12, H8, H1, 20, 52000, data (Network 3)
- r11, h1, H8, H1, 20, 52000, data (Network 2)

- FTP reply message from H1 to H8.

- h1, r11, H1, H8, 52000, 20, data (Network 2)
- r12, r21, H1, H8, 52000, 20, data (Network 3)
- r22, r31, H1, H8, 52000, 20, data (Network 4)
- r32, h8, H1, H8, 52000, 0, data (Network 1)

- Telnet request message from H6 to H3.

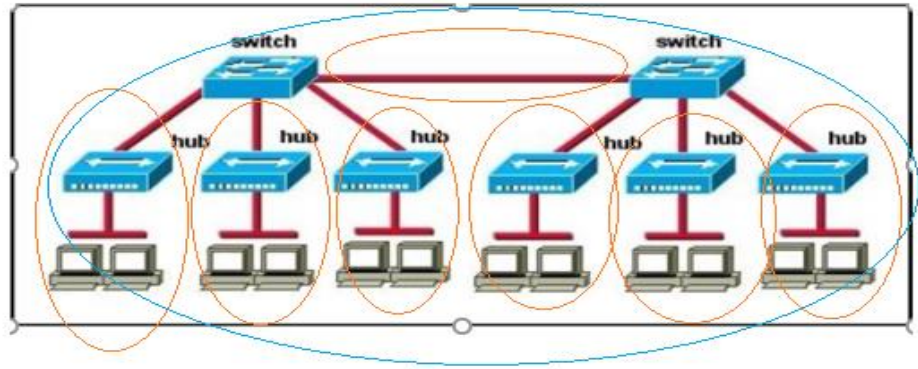
- h6, r12, H6, H3, 53000, 23, data (Network 3)
- r11, h3, H6, H3, 53000, 23, data (Network 2)

- Telnet reply message from H3 to H6.

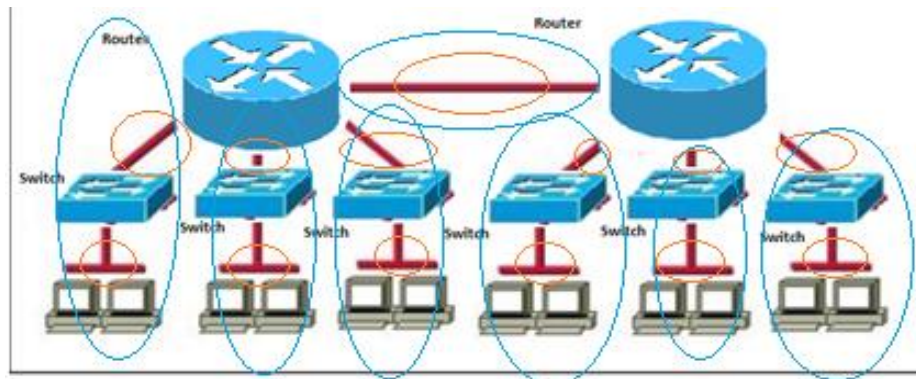
- h3, r11, H3, H6, 23, 53000, data (Network 2)
- r12, h6, H3, H6, 23, 53000, data (Network 3)

Exercise 2:

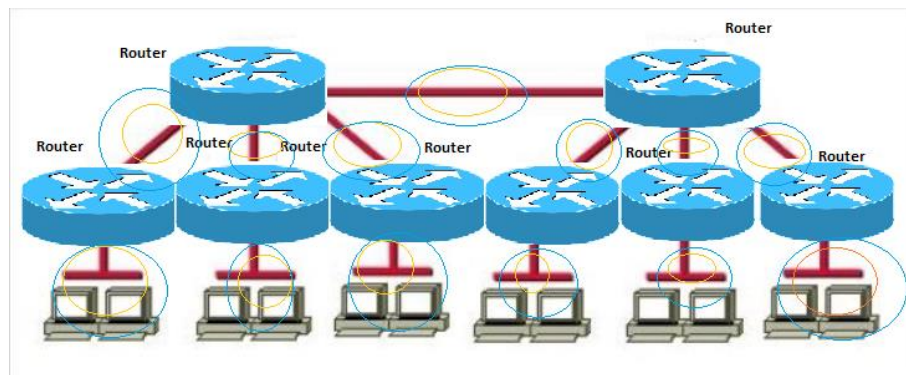
- a) **Broadcast Domain: 1**
Collision Domain: 7



- b) **Broadcast Domain: 7**
Collision Domain: 13



- c) **Broadcast Domain: 13**
Collision Domain: 13



Exercise 3:

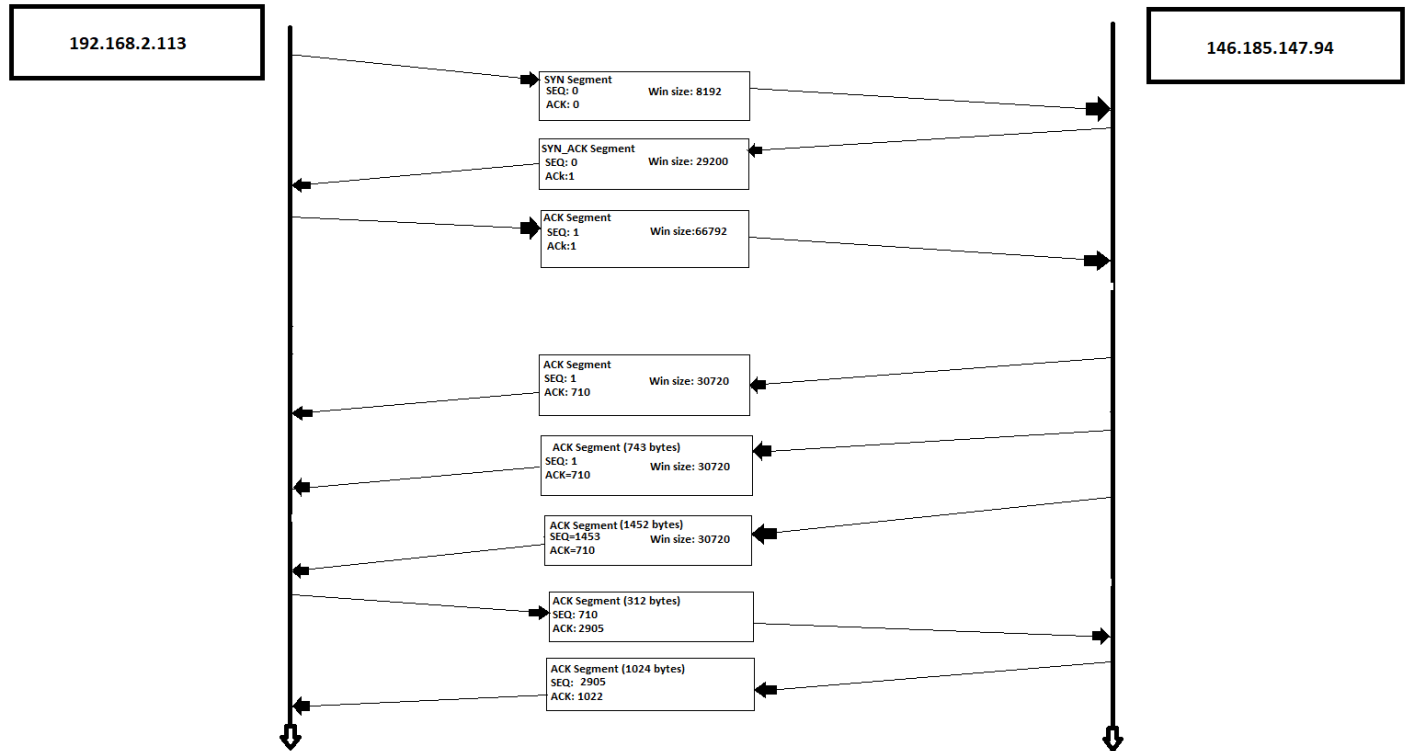
a)

Source Port address:	50106
Destination port address:	80
Sequence number:	0
Ack number:	0
Header Length:	32 bytes
Flags (which of the six flags are set):	SYN: Synchronize sequence number during connection
Window size:	8192
Checksum:	0xe957
Urgent pointer:	0
Options:	Maximum segment size: 1460 bytes, No-Operation (NOP) Windows Scale: 2 (multiply by 4) Kind: Window scale (3) Length: 3 Shift Count: 2 Multiplier: 4 No-Operation (NOP) No-Operation (NOP), SACK permitted: Kind: SACK permitted (4) Length: 2

b) Checksum value in binary: 1110100101010111

- c) Timing diagram: Message 1-7 and I have also made the timing diagram for Message 8 and Message 9 of the part d) and e).

Note: ACK for Message 1: -



- d) SEQ Number: 710
ACK Number: 2905

- e) SEQ Number: 2905
ACK Number: 1022