EL5373

INTERNET ARCHITECTURE AND PROTOCOLS

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49/50

Workstation: APAH Othello_I

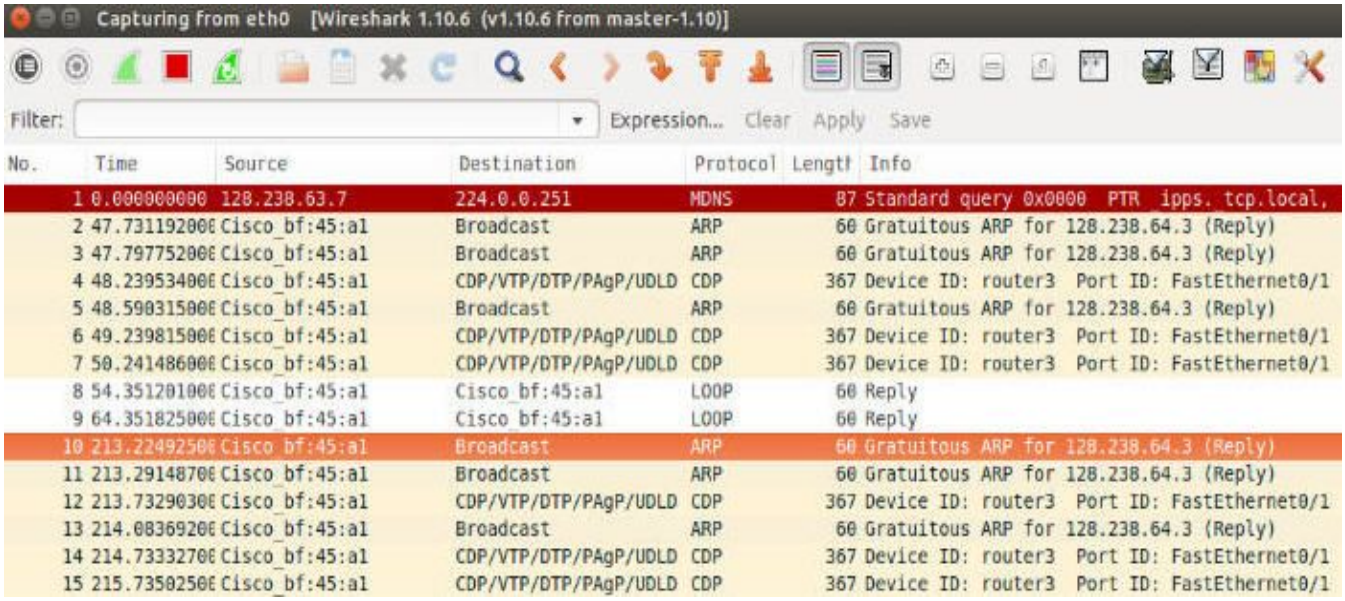
MAC: f8:0f:41:c4:7f:aa

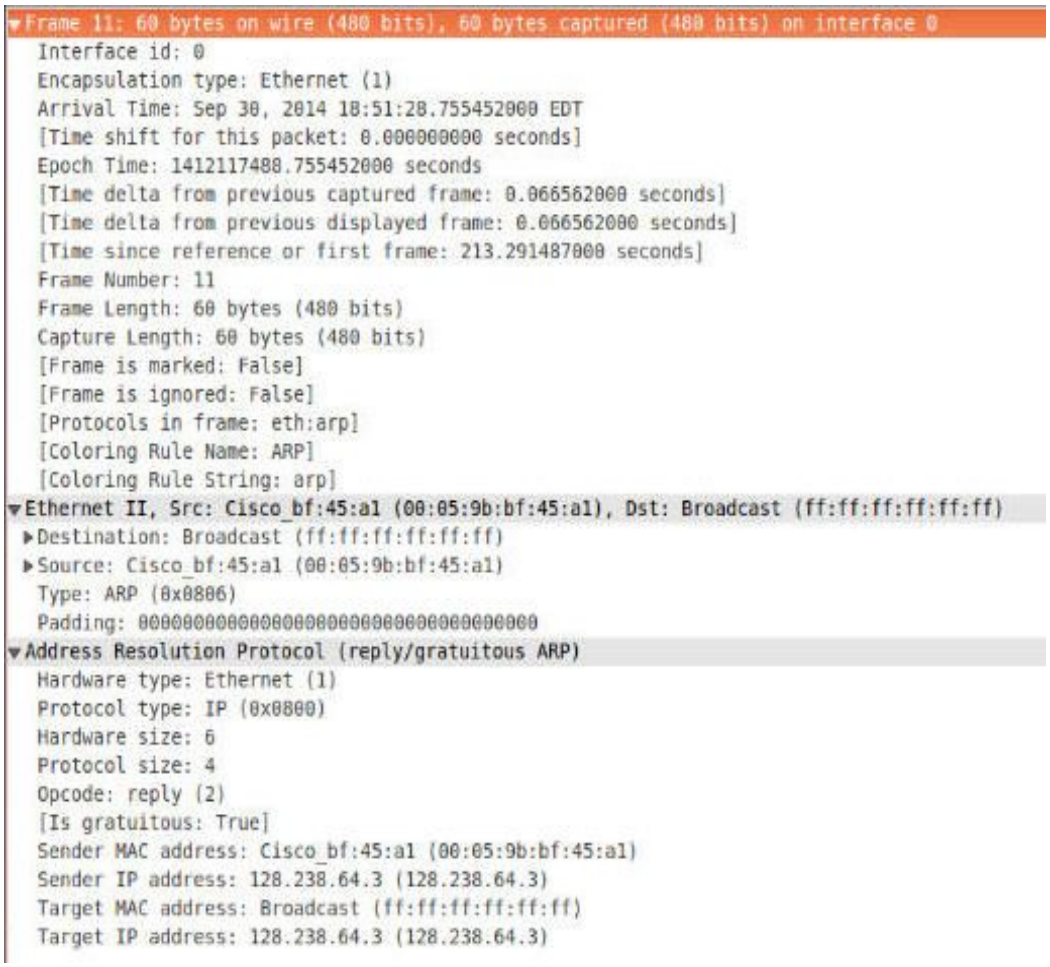
Lab Report 3

Due Oct 7, 2014

Exercise 1

The default IP address of the router interface is **128.238.64.3**
Gratuitous ARP sent by the router.



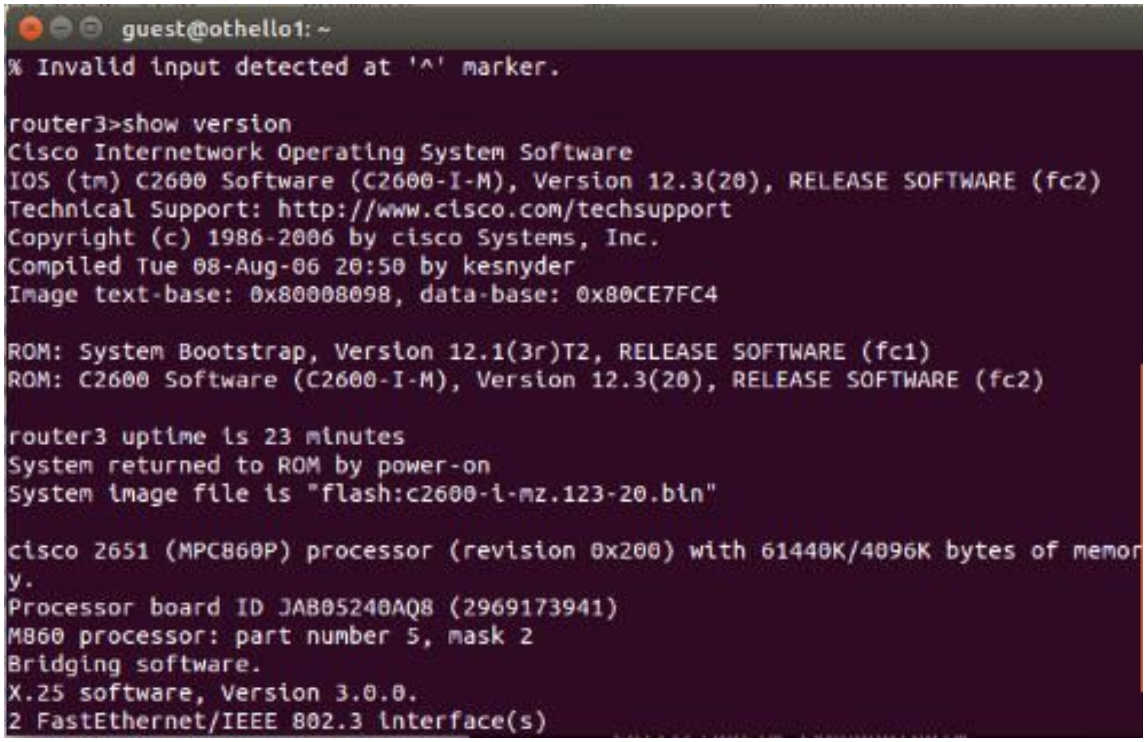


Exercise 2

Change the IP address of my workstation to be the same subnet as the router 3 and telnet the router 3 (default ip address 128.238.63.4).

Show Version

Version 12.3(20) Release Software (fc2)



Exercise 3

In order to finish this part, we change router interface IP address as Figure 3.7.

Router 3	eth0 (123.238.63.3)	eth1 (128.238.63.4)
Host	Partner(eth0) (128.238.63.100)	Me(eth1) (128.238.63.115)

What are the IP and MAC addresses of a packet that went from your machine to the bridge?

IP 128.238.63.100 MAC f8:0f:41:c4:7f:a8

What are the IP and MAC addresses of a packet that went from the router to your partner's machine?

IP 128.238.63.100 MAC f8:0f:41:c4:7f:a8

What are the IP and MAC addresses of a packet that went from partner's machine to the bridge?

IP 128.238.63.115 MAC f8:0f:41:c4:7f:aa

What are the IP and MAC addresses of a packet that went from the router to your machine?

IP 128.238.63.115 MAC f8:0f:41:c4:7f:aa

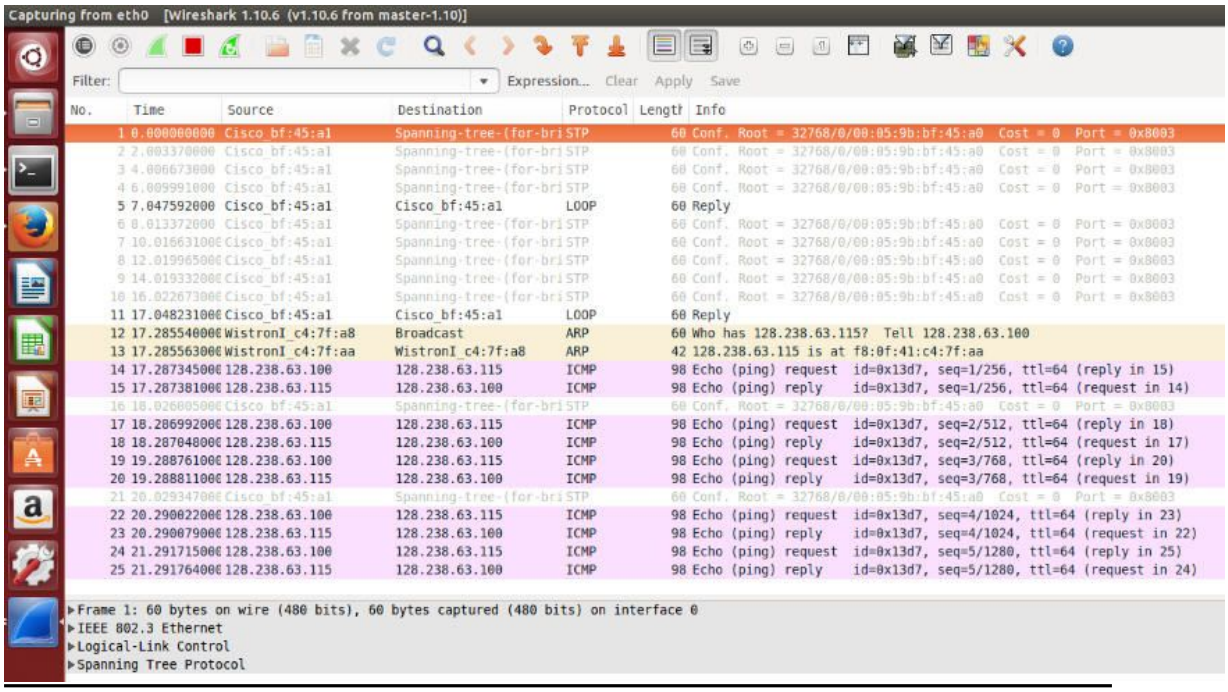
Using the tcpdump outputs from both machines, calculate the average delay that a packet experienced in the bridge.

For this question, we can capture some completed ICMP request/reply to calculate the delay. When I ping my partner, my machine sends ICMP request, and then partner's machine receive the request, send ICMP reply to my machine. So we can calculate round trip delay from tcpdump output.

368	511.0731240€	128.238.63.115	128.238.63.100	ICMP	42 Echo (ping) request id=0x1be7, seq=2/512, ttl=64 (reply in 369)
369	511.0743540€	128.238.63.100	128.238.63.115	ICMP	60 Echo (ping) reply id=0x1be7, seq=2/512, ttl=64 (request in 368)
370	512.0744630€	128.238.63.115	128.238.63.100	ICMP	42 Echo (ping) request id=0x1be7, seq=3/768, ttl=64 (reply in 371)
371	512.0757070€	128.238.63.100	128.238.63.115	ICMP	60 Echo (ping) reply id=0x1be7, seq=3/768, ttl=64 (request in 370)
372	512.5749250€	Cisco_bf:45:a1	Spanning-tree-(for-bri	STP	60 Conf. Root = 32768/0/00:05:9b:bf:45:a0 Cost = 0 Port = 0x8003
373	512.9689690€	Cisco_bf:45:a1	CDP/VTP/DTP/PAgP/UDLD	CDP	376 Device ID: router3 Port ID: FastEthernet0/1
374	513.0758790€	128.238.63.115	128.238.63.100	ICMP	42 Echo (ping) request id=0x1be7, seq=4/1024, ttl=64 (reply in 375)
375	513.0771950€	128.238.63.100	128.238.63.115	ICMP	60 Echo (ping) reply id=0x1be7, seq=4/1024, ttl=64 (request in 374)
376	514.0766830€	128.238.63.115	128.238.63.100	ICMP	42 Echo (ping) request id=0x1be7, seq=5/1280, ttl=64
377	514.0779230€	128.238.63.100	128.238.63.115	ICMP	60 Echo (ping) reply id=0x1be7, seq=5/1280, ttl=64 (request in 376)

When I ping my partner, from these 4 complete ICMP process, we have 4 round trip delay time, 0.001316, 0.00123, 0.00124, 0.00124 seconds.

So the average transmission delay in bridge is half round trip delay, 0.000628 (6.28E-4) seconds.



Exercise 4

A bridge sends its BPDUs every **2 seconds.**

*Priority level always :32768

Othello_1 Root ID: 00:05:9b:bf:45:a0 Root path cost: 0 Bridge ID: 00:05:9b:bf:45:a0 Port ID: 0x8003	Desdemona_1 Root ID: 00:05:9b:bf:45:a0 Root path cost: 0 Bridge ID: 00:05:9b:bf:45:a0 Port ID: 0x8002
Katherina_1 Root ID: 00:05:9b:bf:4a:80 Root path cost: 0 Bridge ID: 00:05:9b:bf:4a:80 Port ID: 0x8003	Petruchio_1 Root ID: 00:05:9b:bf:4a:80 Root path cost: 0 Bridge ID: 00:05:9b:bf:4a:80 Port ID: 0x8004
Romeo_1 Root ID: 00:09:e8:d9:93:60 Root path cost: 0 Bridge ID: 00:09:e8:d9:93:60 Port ID: 0x8004	Juliet_1 Root ID: 00:09:e8:d9:93:60 Root path cost: 0 Bridge ID: 00:09:e8:d9:93:60 Port ID: 0x8003
Ophelia_1 Root ID: 00:05:9b:bf:44:80 Root path cost: 0 Bridge ID: 00:05:9b:bf:44:80	Hamlet_1 Root ID: 00:05:9b:bf:44:80 Root path cost: 0 Bridge ID: 00:05:9b:bf:44:80

Port ID: 0x8003	Port ID: 0x8004

Exercise 5

Form show bridge

Bridge 4 eth1 is blocked.

Bridge 3 eth0 and **Bridge 1 eth1** are in forwarding state to each bridge.

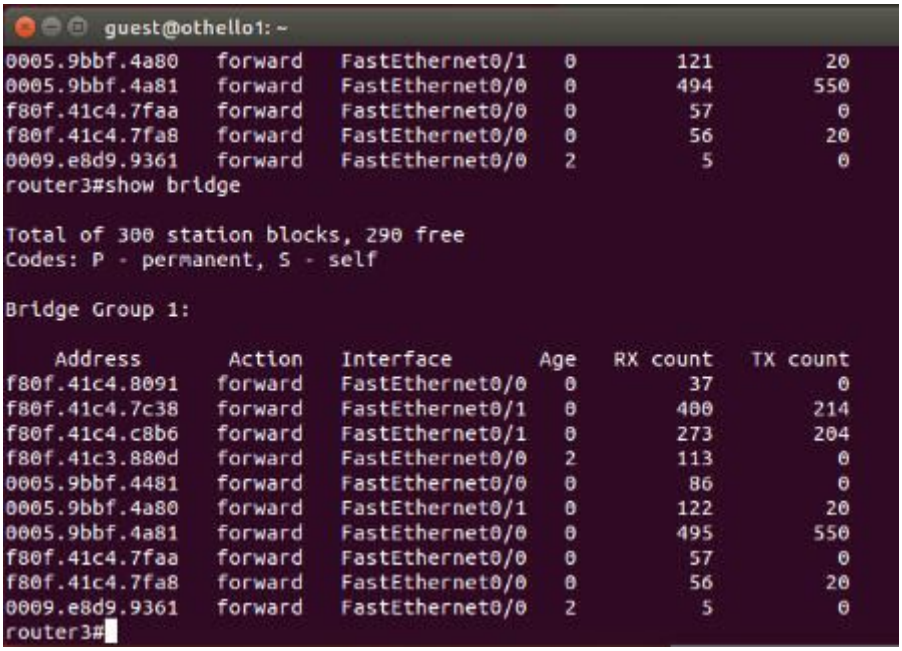
Bridge 1

```
guest@othello1: ~
User Access Verification

Password:
router1>enable
Password:
router1#show bridge

Total of 300 station blocks, 290 free
Codes: P - permanent, S - self

Bridge Group 1:

    Address        Action   Interface       Age   RX count   TX count
f80f.41c3.8683   forward   FastEthernet0/0   0          1          0
f80f.41c4.8091   forward   FastEthernet0/1   1         35          0
f80f.41c4.7c38   forward   FastEthernet0/1   0        396        394
f80f.41c4.c8b6   forward   FastEthernet0/1   2        241        304
f80f.41c3.880d   forward   FastEthernet0/1   0          5          0
0005.9bbf.4480   forward   FastEthernet0/1   0         86         17
0005.9bbf.4a80   forward   FastEthernet0/1   0         91          0
0005.9bbf.4a81   forward   FastEthernet0/0   0        790        550
f80f.41c4.7faa   forward   FastEthernet0/1   4          3          0
0005.9bbf.45a0   forward   FastEthernet0/1   1        161          0
router1#
```

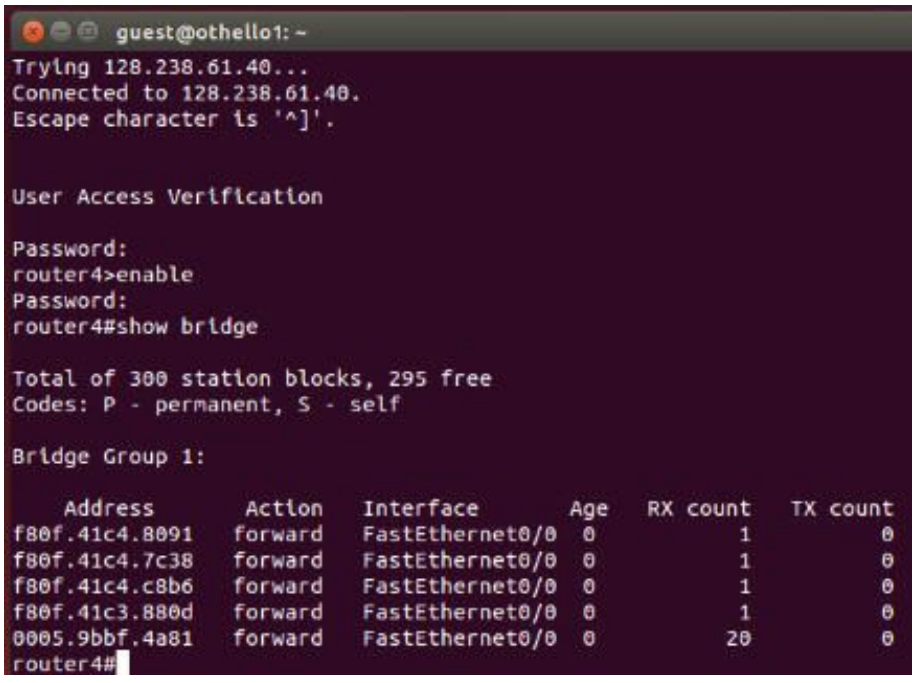
Bridge 2

```
guest@othello1: ~
User Access Verification

Password:
router2>enable
Password:
router2#show bridge

Total of 300 station blocks, 290 free
Codes: P - permanent, S - self

Bridge Group 1:

    Address        Action   Interface       Age   RX count   TX count
f80f.41c4.8091   forward   FastEthernet0/0   1         38          0
f80f.41c4.7c38   forward   FastEthernet0/1   1        400        389
f80f.41c4.c8b6   forward   FastEthernet0/1   1        245        304
f80f.41c3.880d   forward   FastEthernet0/0   2        115          0
0005.9bbf.4a80   forward   FastEthernet0/1   0        116          0
0005.9bbf.4a81   forward   FastEthernet0/0   0        785        550
f80f.41c4.7faa   forward   FastEthernet0/1   0         33          0
f80f.41c4.7fa8   forward   FastEthernet0/1   0         60         28
0005.9bbf.45a0   forward   FastEthernet0/1   0        267          0
0009.e8d9.9361   forward   FastEthernet0/0   0         34         32
router2#
```

Bridge 3



Bridge 4



Exercise 6

Final BPDU Messages collected

*Priority level always :32768

Bridge 1 Root ID: 00:05:9b:bf:44:80 Root path cost: 100 Bridge ID: 00:09:e8:d9:93:60 Port ID: 0x8003	Bridge 2 Root ID: 00:05:9b:bf:44:80 Root path cost: 0 Bridge ID: 00:05:9b:bf:44:80 Port ID: 0x8003
Bridge 3 Root ID: 00:05:9b:bf:44:80 Root path cost: 100 Bridge ID: 00:05:9b:bf:45:a0 Port ID: 0x8003	Bridge 4 Root ID: 00:05:9b:bf:44:80 Root path cost: 200 Bridge ID: 00:05:9b:Bf:4a:80 Port ID: 0x8003