

choose one: Received Received help from:
 (or more) no help Collaborated with: _____

Homework: /SI110/The Cyber Battlefield/Network Nuts and Bolts

1. On the left are listed three ways of identifying computers for network communication. Match them to a correct description from the right:

- | | | |
|--------------------|--|------------|
| ___ a. MAC address | 1. can be changed, used by the Internet Layer | 20/16/12/0 |
| ___ b. IP address | 2. easy for people to remember, but cannot be used directly to communicate between hosts | |
| ___ c. domain name | 3. unchangeable, used by the Link Layer | |

2. Consider the following two hosts:

Host A	Host B	
IP address: 145.38.22.11	IP address: 145.38.20.75	
Subnet mask: 255.255.252.0	Subnet mask: 255.255.252.0	25/20/15/0

Use the Network Address Calculator found on the course Resources page to answer the following: Are A and B on the same network? Explain how you arrived at your answer!

3. Pull up the demo page <http://rona.cs.usna.edu/~sil10/resources/netdemo/Networking.html> and click on Host 1 and Host 3. Then step carefully through the demo. Note: you may want to use ctrl-minus to shrink the text size until everything fits nicely on your screen.

Consider the following three hosts.

	Host X	Host Y	Host Z
IP address	145.38.22.11	145.38.20.75	87.210.100.17
Subnet mask	255.255.252.0	255.255.252.0	255.255.255.0
Gateway Router	145.38.20.75	145.38.20.75	87.210.100.5
MAC address	33-48-A1-EC-BB-3A	E6-00-6A-FB-39-1D	EE-46-02-72-39-B3

If host X wants to send the message "foobar" to host Z, which of the below describes what X sends to its switch? Explain your answer!

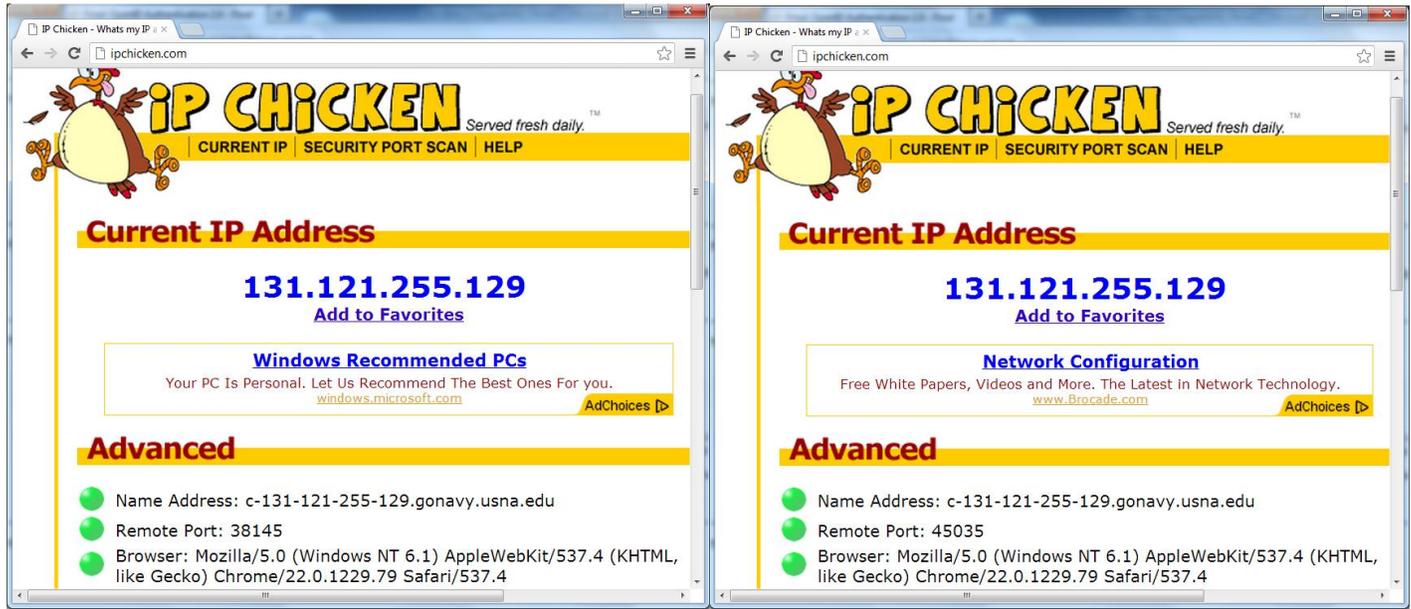
- a. packet 145.38.20.75:foobar to MAC address EE-46-02-72-39-B3
- b. packet 87.210.100.17:foobar to MAC address E6-00-6A-FB-39-1D
- c. packet 87.210.100.17:foobar to MAC address EE-46-02-72-39-B3
- d. packet 145.38.20.75:foobar to MAC address E6-00-6A-FB-39-1D

4. Pull up the network address translation demo at

<http://rona.cs.usna.edu/~si110/resources/netdemo/privateIP.html>

and step carefully through the demo.

Now, here's the question: Midshipman X and midshipman Y point their browsers at ipchicken.com at the same time. What each of them sees is shown below.



Midshipman X sees this

Midshipman Y sees this

a. The IP Address of the USNA server that's doing the network address translation is

10/0/0/0

b. The ipchicken.com webserver sends the packet shown below back to USNA. This packet is being sent back to which host (Mid X / Mid Y)? How do you (and, more importantly, the network address translation server!) know?

From:	Data:
209.68.27.16	HTTP/1.1 200 OK
Port 80	Date: Thus, 04
To:	Oct 2012 12:19:
131.121.255.129	41 GMT Server:
Port 45035	Apache/2.2.19 (

20/16/12/0