First name:
Last name:

INFO2, ENSIBS Vannes, 2014-12-17

Network evaluation

All documents are allowed, but no communication at all!
Short and right answers are the best (French or English). No need to debate, nor philosophize.
Good luck!

1 OSI model (2 pts)

Give the name and a short overview of the four first layers' objectives (without details):

2 Domain Name System (2 pts)

Theses packets were captured on my laptop just after a `ping`.

Number	Source	Destination	Protocol	Comment
1	192.168.0.1	208.67.222.222	DNS	Standard query 0xb559 A imdb.com
2	208.67.222.222	192.168.0.1	DNS	Standard query response 0xb559 A 207.171.166.22 A 72.21.210.29 A 72.21.206.80

Figure 1: DNS query

- What is my IP address?
- What is my DNS server IP address?
- What could be the destination(s) of the *ping*?
- What is the domain name I tried to *ping*?

3 Debug it (5 pts)

Using the output of the following commands, correct the network displayed in fig.2.

```
$ping 72.21.206.80
 Host Unreachable
$route -n
Destination  Gateway      Genmask
0.0.0.0      192.168.0.3  0.0.0.0
192.168.0.0  0.0.0.0      255.255.255.0
```

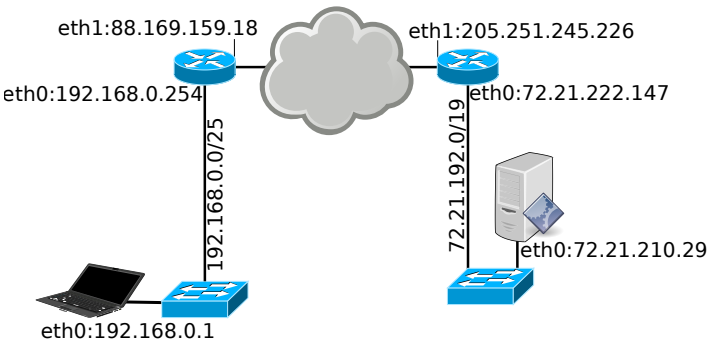

Figure 2: Buggy network

4 Design it (11 pts)

In this question you need to design several subnetworks. Starting from 176.22.0.0, give for each single subnetwork (no schema expected):

- the subnet mask and maximum number of hosts,
- the network IP address,
- the first node IP address,
- the last node IP address,
- the broadcast IP address,
- the CIDR of the "super-network".

Sub-networks to be desgined are:

a. 10000 machines for the students,

b. 300 machines for the network services (DNS server, web, NAS...),

c. 200 machines for the IT administration,

d. 50 machines for the network lab,

e. 1000 machines for the teachers and workers.