**Experiência 1 – Configure na IP Network**

1. What are the ARP packets and what are they used for?

O ARP é um protocolo de comunicação que serve para descobrir o endereção da camada de ligação associado ao endereço IPv4. Serve para mapear o endereço de rede a um endereço físico como o endereço MAC.

1. What are the MAC and IP adresses of ARP packets and why?
2. What packets does the ping command generate?
3. What are the MAC and IP adresses of the ping packets?
4. How to determine if a receiving Ethernet frame is ARP, IP, ICMP?
5. How to determine the length of a receiving frame?
6. **What is the loopback interface and why is it important?**

The loopback interface is a virtual network interface that allows the computer to receive responses from itself. It is used to test if the messages sent are correct.(????? tenho de ver o que escrever)

**Experiência 2 – Implement two virtual LANs in a switch**

1. How to configure vlany0?

Na régua 1 a porta T4 tem que estar ligada à porta do Switch na régua 2. A porta T3 da régua 1 vai estar ligada à porta S0 do tuxy que se deseja estar ligado ao Switch. Para criar a vlan invocam-se estes comandos no GTKTerm do tuxy escolhido:

>configure terminal

> vlan y0

> end

Depois temos que adicionar as portas dos tuxy 1 e 4:

> configure terminal

> interface fastethernet 0/[nº da porta]

> switchport mode access

> switchport access vlan y0

> end

2. How many broadcast domains are there? How can you conclude it from the logs?

Dois visto que o tuxy 1 recebe resposta do tuxy 4 quando faz ping broadcast, mas não do tuxy 2. O tuxy 2 não recebe resposta de ninguém quando faz ping broadcast. Portanto há dois domínios de broadcast: o que contém o tuxy 1 e tuxy4 e o que contém o tuxy 2.

**Experiência 3 – Configure a Router in Linux**

1. What routes are there in the tuxes? What are their meaning?

Há as rotas para as vlans associadas. E as rotas que foram criadas durante a experiência que foram as rotas do tuxy 1 para o tuxy 2 edo tuxy 1 para o tuxy 2. As rotas é até onde se consegue chegar apartir desse tuxy.

1. What information does and entry of the forwarding table contain?

Contém o destino, a gateway, netmask, flags, matric, Ref, Use, Iface. (explicar cada uma delas brevemente) (Route tables)

1. What ARP messages, and associated MAC addresses, are observed and why?
2. What ICMP packets are observed and why?

Request and Reply?

1. What are the IP and MAC addresses associated to ICMP packet and why?

**Experiência 4 – Configure a Commercial Router and Implememt NAT**

1. How to configure a static route in a comercial router?

Na régua 1 a porta T4 tem que estar ligada à porta do Router na régua 2. A porta T3 da régua 1 vai estar ligada à porta S0 do tuxy que se deseja estar ligado ao Router. Para criar a vlan invocam-se estes comandos no GTKTerm do tuxy escolhido:

> configure terminal

> ip route [ip da rota de destino] [máscara] [ip da gw]

> exit

2. What are the paths followed by the packets in the experiments carried out and why?

Se a rota existir, os packets usam essa rota. Se a rota não existir ele vai ao router (rota default) e o router diz-lhe que o tuxy 4 existe e para mandar por la.

3. How to configue NAT in a comercial router?

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4. What does NAT do?

# Experiência 5- DNS:

In this experiment we had to configure the DNS (*Domain Name System)* in tuxys 1,2 and 4. A DNS server (in this case services.netlab.fe.up.pt) contains a database of public IP addresses and their associated hostnames, it is used to translate the hostnames to their respective IP addresses.

**1)How to configure the DNS service at a host?**

In order to configure the DNS service we need to get to change the file resolv.conf which is located in vi/etc in the host tux. The file must contain the following information:

**search netlab.fe.up.pt**

**nameserver 172.16.1.1**

In which netlab.fe.up.pt is the name of the DNS server and 172.16.1.1 is its IP address.

After this experiment we should be able to have access to the internet, using a browser, in the tuxys.

**2)What packets are exchanged by DNS and what information is transported?**

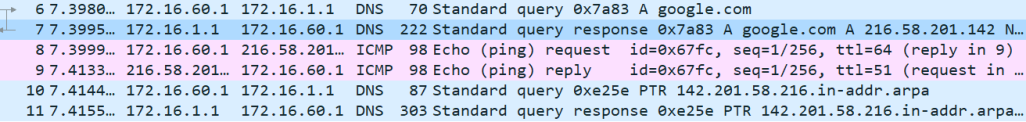
First, we have a packet from the Host to the Server (line 6) containing the wanted hostname, asking for its IP address.

Figure 1- Log obtained when accessing google.com

The server responds (line 7) with a packet containing the hostname’s IP address.