B4 - Systems and Networks Administration

B-NSA-400

Systems and Networks

Configure a small network of servers

2.0

EPITECH.

Goal

Configure a network, its routing and install some services.

Resources

VirtualBox: virtualbox

All installations must be done in virtual machines on your machines. Do not touch / modify the configuration of your operating systems !

Necessary material

- 4 to 5 pc
- 1 network switch (to be collected from your teacher)
- 5 network cables (to be collected from your teacher)

Machine configuration

+ PC1 (ro1)

- This PC must have a virtual machine configured as a router (ro1) that has 3 outputs
- Operating system : Debian Linux WITHOUT GUI
- The first output, using the NAT on your WiFi card, itself connected to the IONIS wifi network.
- The 2 other outputs will be bridged on your physical network card, but with 2 different subnetworks (see diagram)

+ PC2 (www & service)

This PC will have to run 2 virtual machines :

- The first machine will be named www and will be installed under ArchLinux (WITHOUT GUI)
- The second machine will be named Service and will be installed under Ubuntu Server (WITHOUT GUI)

+ PC3 (ro2)

This machine will have to run a virtual machine as a router (ro2)

- Operating system : Debian Linux WITHOUT GUI
- The 2 outputs will be bridged on your physical network card, but with 2 different subnetworks (see diagram)

+ PC4 (intra)

This PC will have to run a virtual machine

- The machine will named intra and will be installed under OpenBSD

The client machine will be any PC on any OS and will be used to test your network.

All servers AND routers have fixed IP addresses, addresses and networks must be those specified in the diagram below.

Part 1 : Network

Install the machines and configure them for the network / routers to function correctly.
Test your network by launching `ping` and `traceroute` commands, to see if the packets are optimised :

```
ping 192.168.1.10
ping 192.168.1.11
ping 192.168.42.10
ping 8.8.8.8
ping 185.108.50.1
```

Check that all the machines have access to the internet.
Turn off all the machines, turn them back on without logging in and make sure it still works.

Part 2 : System Administration

In this part, you will need to install different services on the machines :

- ro1 : Router
  - Play the role of the router
  - Install and configure a DHCP server so that it distributes IPs in the range 208.97.0.0/16 on the User network interface only
- ro2 : Router
  - Act only as a router
- Service : This server will have several roles :
  - DNS server (with bind9)
  - The server will be configured for the zone nameofyourchoice.com
  - The server will have to solve the IP of the different equipments of your network (ex : www.nameofyourchoice.com = 192.168.1.10)
  - The server must respond to Reverse type requests
  - The server must have as a master, the dns of the school
  - samba server
    - The server must be able to share 2 disk spaces :
      - `\\servicepublic` : 100 MB read / write disk space accessible for everyone, no password
      - `\\serviceprivate` : 100 MB disk space only accessible to users who have an account on the machine

    WARNING: Each user should have a proper space!
- www : This web server will be configured with an Apache2 server and will contain 2 virtualhosts :
  - www.nameofyourchoice.com : website of the company nameofyourchoice

- admin.nameofyourchoice.com : web site accessible by password (protection by htaccess)

- intra : This server will be configured with an Apache 2 server and will contain 1 website :
  - intra.nameofyourchoice.com : website with the mailtrain (www.mailtrain.org) service.
  - Configure intra to make it a mail server (OpenSMTPd) + a webmail client of your choice. (Because of the network architecture, users will be able to send e-mails within your network and to the outside, but will not be able to receive them from outside)
  - On the client, le mail client must be configured with one (or more) account(s) to test the sending and reception of email.

Bonus

Link up with another group, each with their own domain name, and make sure you can send emails from one domain to another.

You must not change the addressing plan or the network architecture.

APPENDIX : DIAGRAM OF THE NETWORK TO DEPLOY