
TP2 Static Routing and DNS

During this lab, you will learn how to configure static routing and DNS.

0. Download the Lab

```
1 cd ~/kathara-labs/  
2 git pull
```

1. Static Routing

Your network is divided into several subnets interconnected by 2 routers. So that the different subnets can be reached, we have set up static routing rules, but some routes seem to be missing...

1.0. Topology

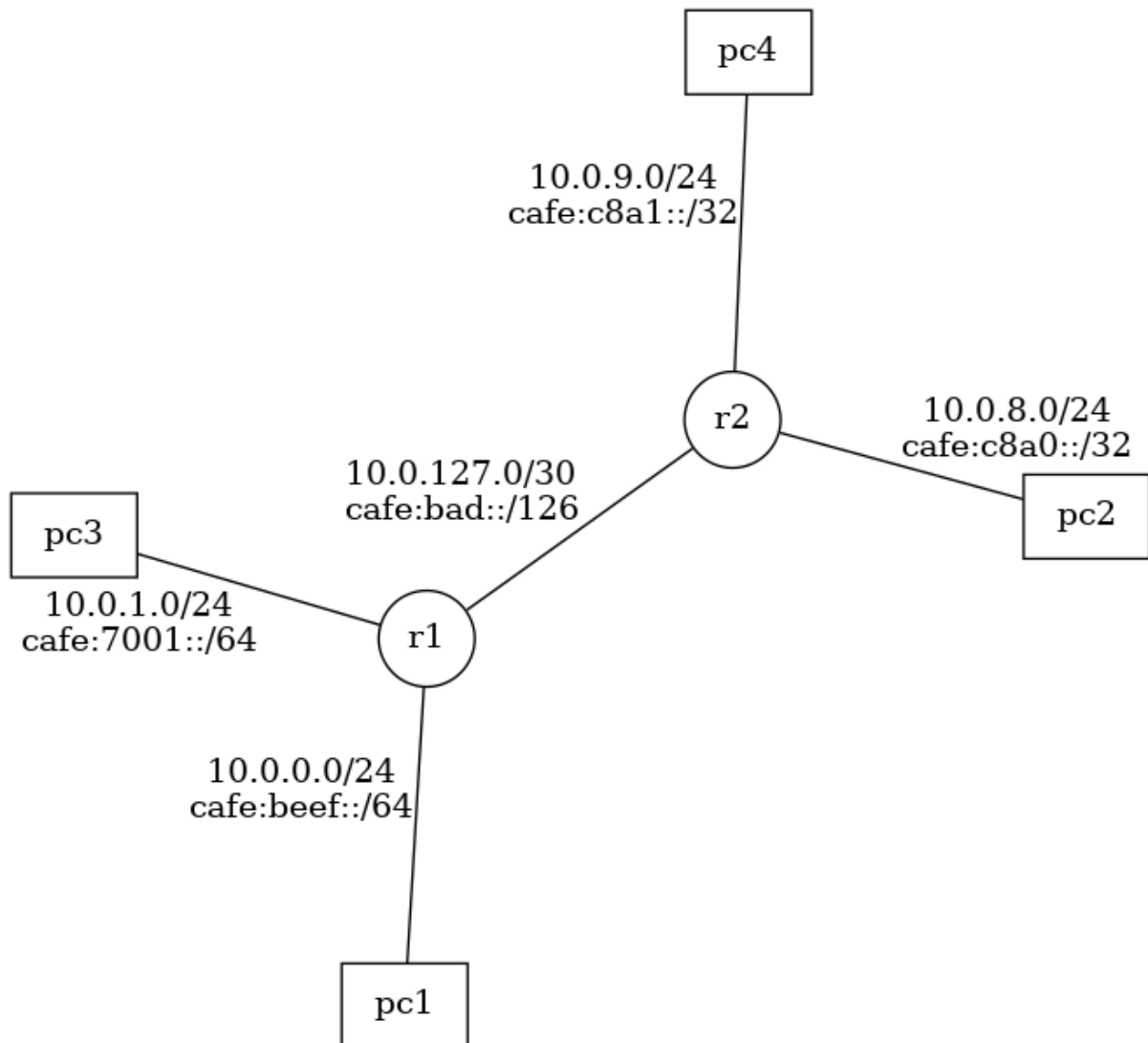


Figure 1: Topology

The topology is composed of 2 routers and 4 PCs.

- PCs: **pc1**, **pc2**, **pc3**, **pc4**
- Routers: **r1**, **r2**

1.1. Launch Kathara Lab

Go to the static-routing folder and launch the lab.

```
1 cd static-routing
2 kathara lstart
```

1.2. pc1 Configuration

Try to ping `cafe:7001::2` from pc1. What is the result? Why?

```
1 ping -6 cafe:7001::2
```

Use the `ip -6 route` command to fix the issue.

1.3. Missing Route

Try to ping `10.0.8.2` from pc1. What is the result? Why?

```
1 ping 10.0.8.2
```

Use the `traceroute` command to find out where the packets are being dropped.

Add a new route on a router to fix the issue (you can add only one route).

1.4. Verify the Configuration

Use ping to verify that all the PCs can communicate with each other.

If all the PCs can communicate with each other, you have successfully configured the static routing. You can now stop the lab and quit the folder.

```
1 kathara lclean
2 cd ..
```

2. DNS

For this part of the lab, we use the official Kathara DNS lab. You will learn how DNS works and how to add a new entry in a DNS server.

2.1. DNS Requests

On **pc2**, launch a `tcpdump` to observe the network.

```
1 tcpdump -w shared/pc2.pcap
```

On **pc1**, use the **dig** command to perform a DNS request to resolve **pc2.startup.net**.

```
1 dig pc2.startup.net -t A
```

What is the result? Can you confirm that it is the correct IP address?

Stop the **tcpdump** on **pc2** and open the pcap file with Wireshark.

What do you see in the capture? + Draw a sequence diagram of the DNS request and reply + How many DNS requests did pc1 make? Why? + What is the interest of using a local DNS server?

2.2. Draw the DNS Hierarchy

Draw the DNS hierarchy.

2.3. Add a New DNS Entry

Add a new entry in the DNS server to resolve **pc3.startup.net**.

Test the new entry with the **dig** command and ping the new entry from **pc1**.

3. Clean the Lab

Stop the lab and quit the folder.

```
1 kathara lclean
2 cd ..
```