Università degli Studi Roma Tre
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Single-host

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Version	1.0
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Web	http://www.kathara.org/
Description	how to set up and manage a single virtual machine

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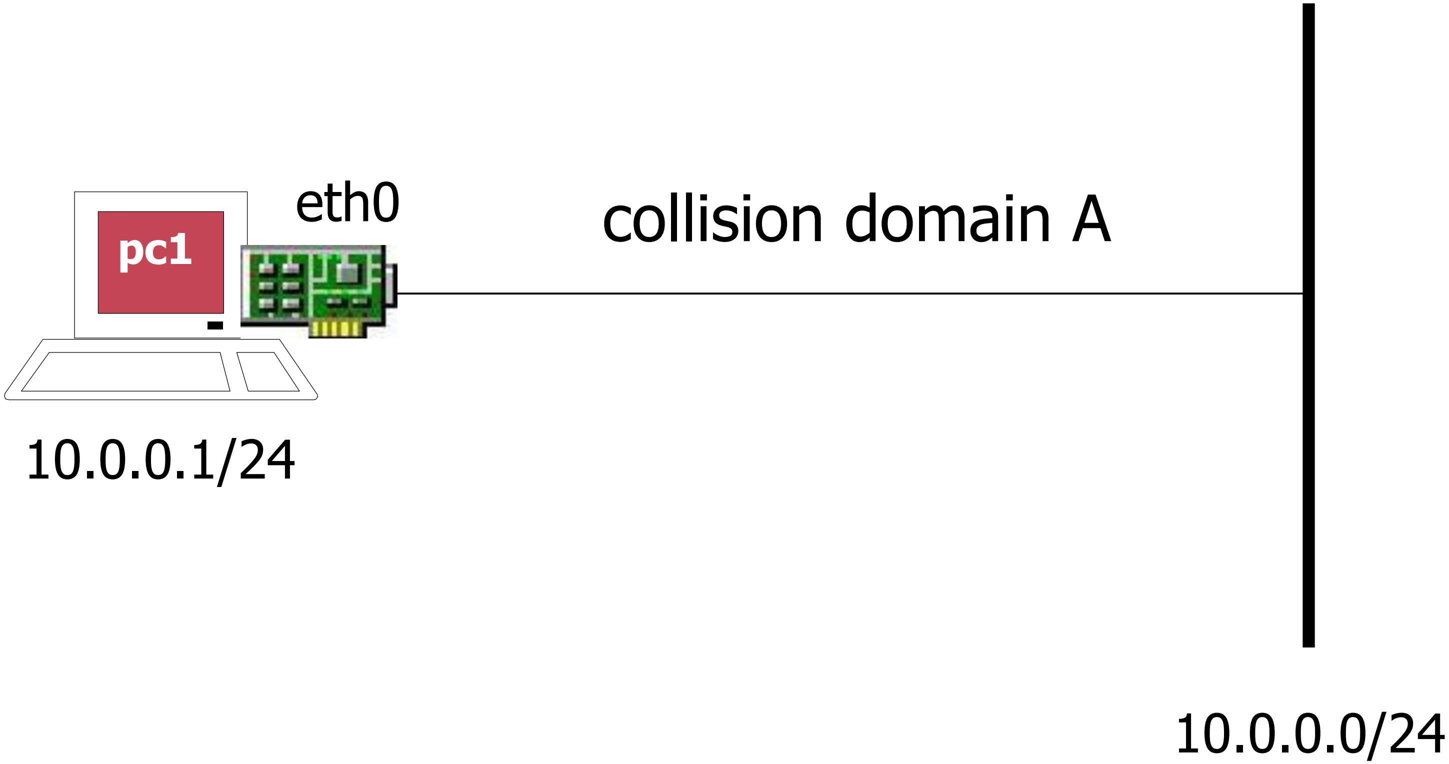
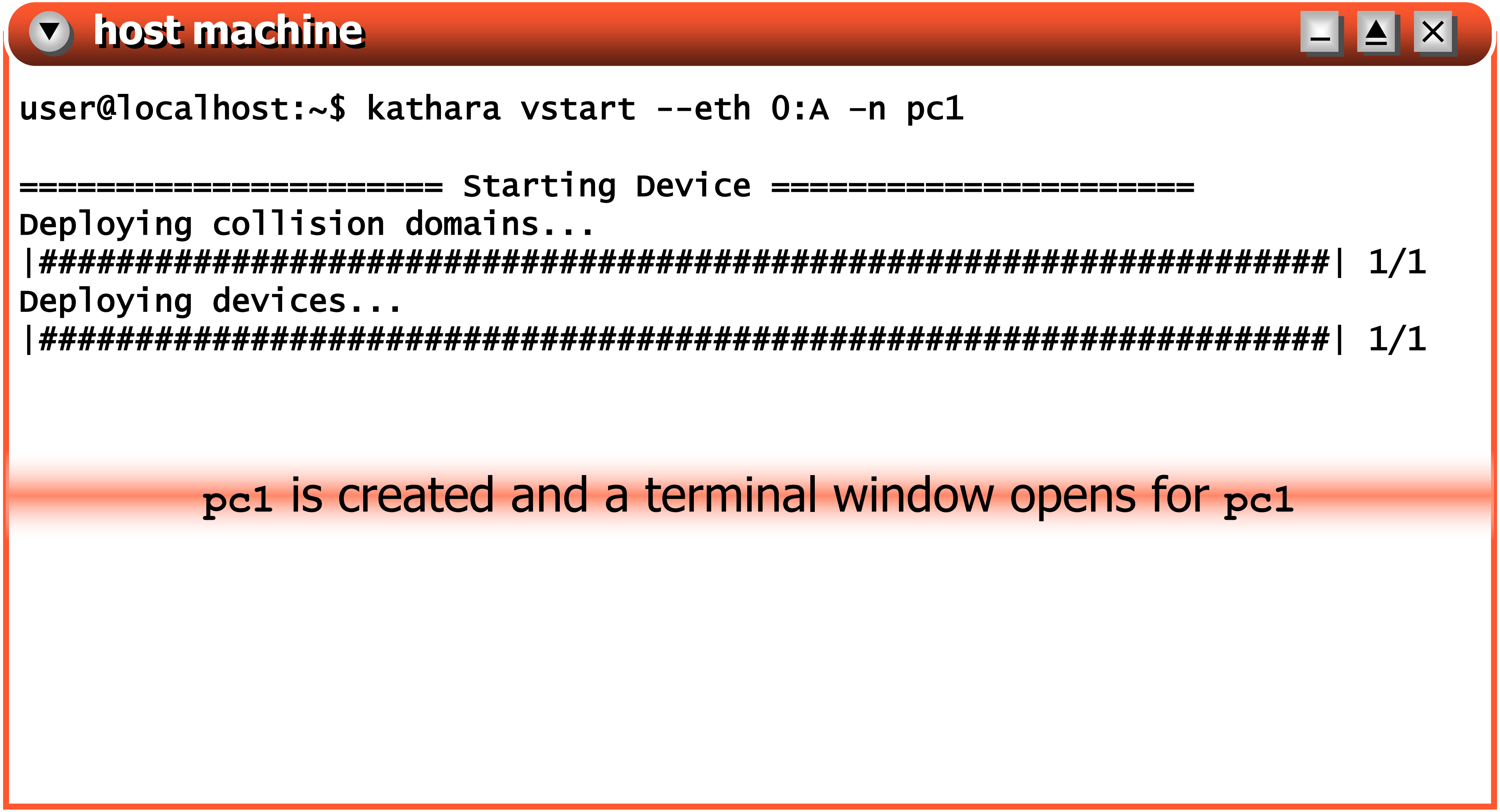
single host



step 1 – creating the vms



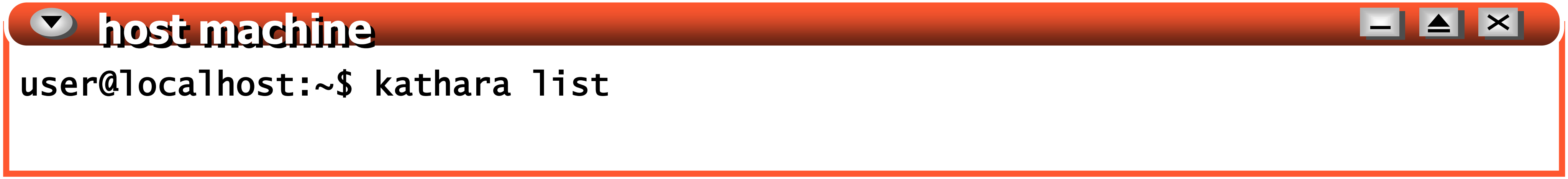
```
user@localhost:~$ kathara vstart --eth 0:A -n pc1

====================== Starting Device ======================
Deploying collision domains...
|##################################################################| 1/1
Deploying devices...
|##################################################################| 1/1
```

`pc1` is created and a terminal window opens for `pc1`

step 2 – logging on pc1

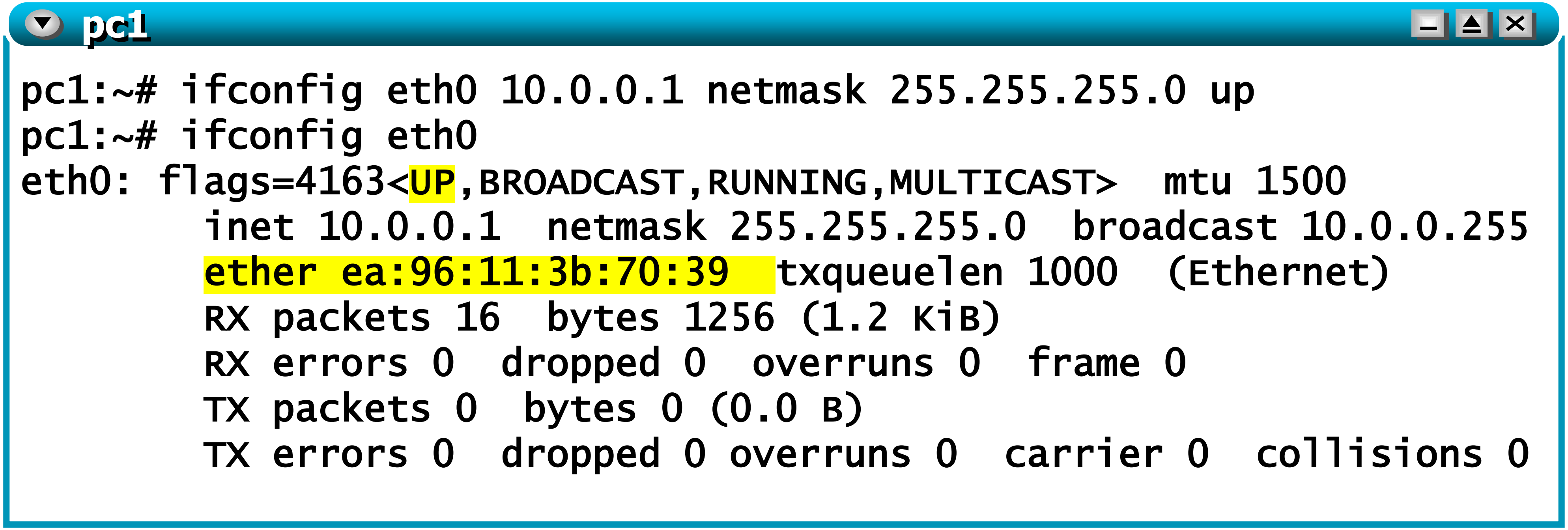
- now you are the administrator (root) of `pc1`



```
user@localhost:~$ kathara list
```

- check also the docker Containers/Apps, you should see your `pc1` container running

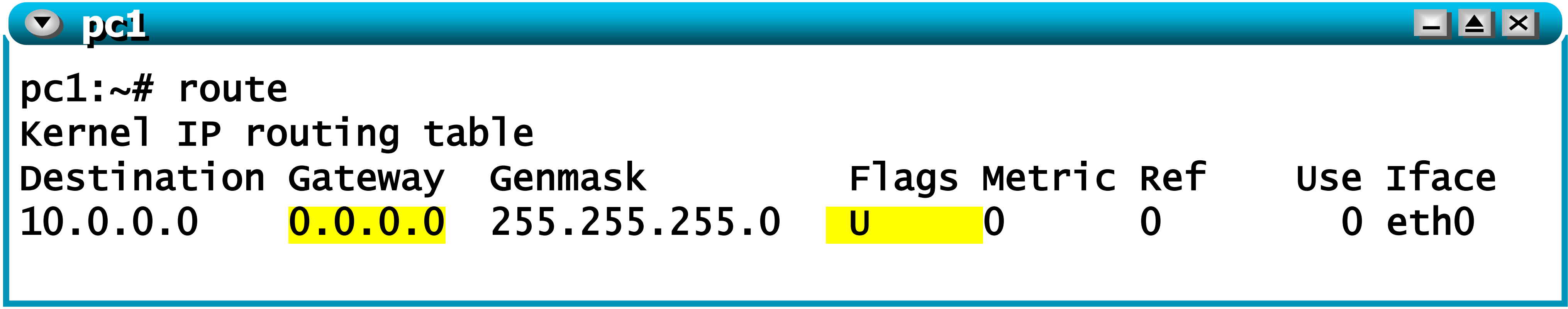
step 4 – configuring the network interface of `pc1`



```
pc1:~# ifconfig eth0 10.0.0.1 netmask 255.255.255.0 up
pc1:~# ifconfig eth0
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 10.0.0.1  netmask 255.255.255.0  broadcast 10.0.0.255
        ether ea:96:11:3b:70:39  txqueuelen 1000  (Ethernet)
        RX packets 16  bytes 1256 (1.2 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

- eth0 has an automatically assigned MAC (ether) address
- eth0 interface is up and running

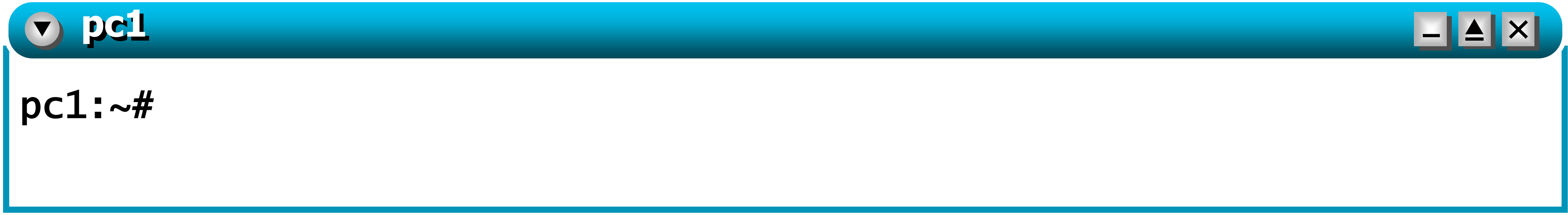
step 5 – checking the routing table



```
pc1:~# route
Kernel IP routing table
Destination Gateway   Genmask         Flags Metric Ref    Use Iface
10.0.0.0    0.0.0.0   255.255.255.0   U     0      0        0 eth0
```

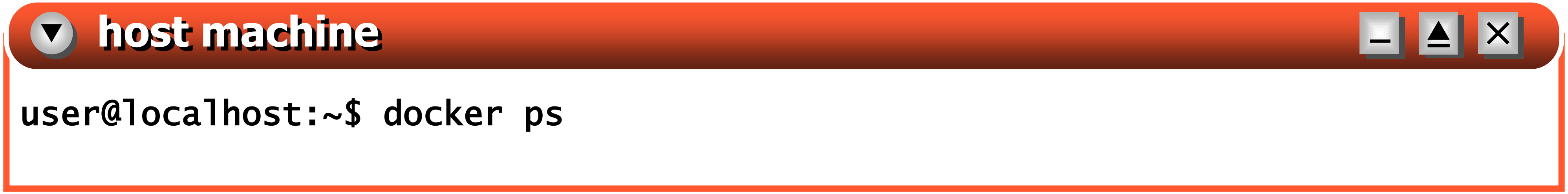
- gateway is set to **0.0.0.0**
- the if status is **UP**

step 6 – shutting down pc1 terminal



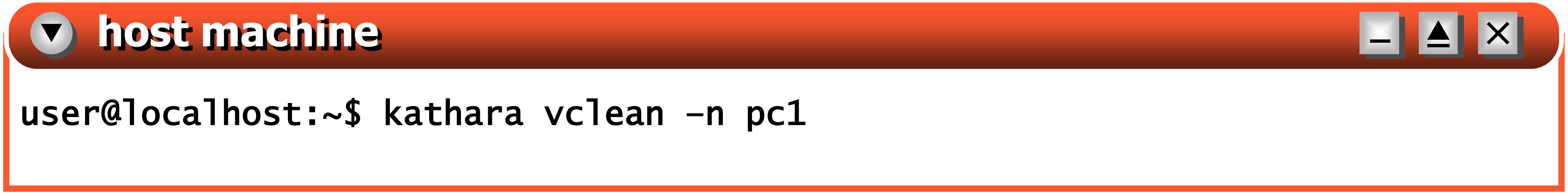
```
pc1:~#
```

- Click the x button in the pc1 terminal
- This shuts down the terminal window (halts `pc1`), but the container is still running (!)
- You can check this in the docker application or by using the following command



```
user@localhost:~$ docker ps
```

step 6 – shutting down the vm

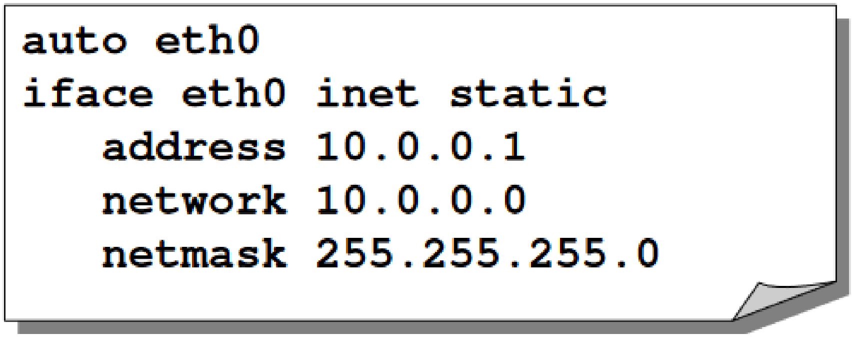


```
user@localhost:~$ kathara vclean -n pc1
```

- Stops and deletes a single Kathara device
- The pc1 container will be deleted from the docker

step 7 – permanent configuration

- Permanent configuration can be obtained, e.g., by editing `/etc/network/interfaces` (inside the virtual `pc1`) and appending the following lines:

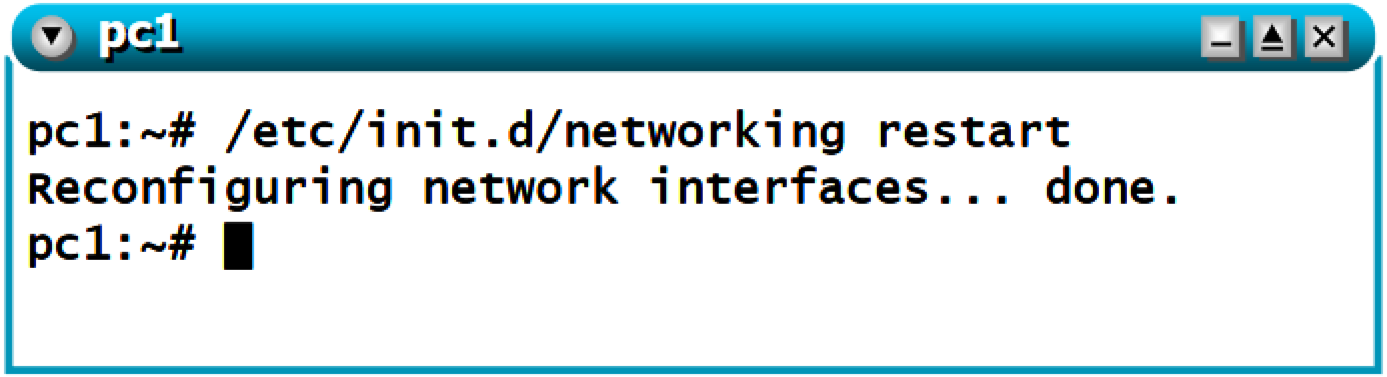


```
auto eth0
iface eth0 inet static
   address 10.0.0.1
   network 10.0.0.0
   netmask 255.255.255.0
```

- tips:
  - Permanent settings in a virtual machine can be configured by editing same files that would be used in a real linux system.
  - The `interfaces` file typically contains the configuration of various networking functions
  - Use linux text editor, like vi, vim or nano
  - Do not delete pre-existing contents of the `interfaces` file
  - Simple change of the `interfaces` file does not immediately affect the operating system behaviour. You need to restart the networking services.
  - Note well that stopping or removing the `pc1` container from the docker irrevocably removes the virtual machine, along with its permanent configuration.

step 8 – restarting network services

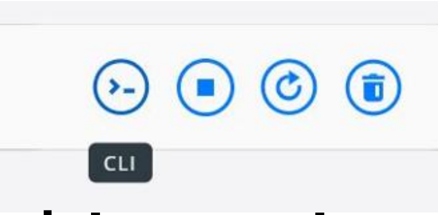
- to see the effect of new configuration on the system behaviour, please restart network services (but not the system):



```
pc1:~# /etc/init.d/networking restart
Reconfiguring network interfaces... done.
pc1:~# 
```

step 9 – opening pc1 container

- in Docker Desktop using `/bin/sh`, by selecting `>_`



- in the host machine using `/bin/bash` in a running container

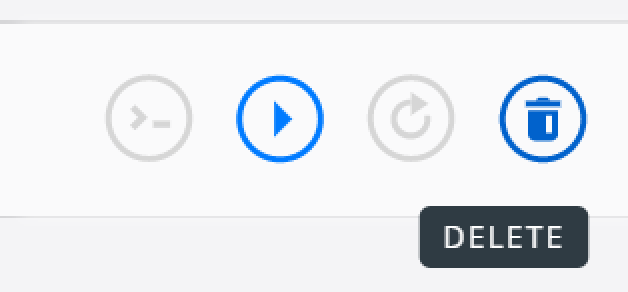
host machine

```
user@localhost:~$  docker exec -it <pc1 container name> /bin/bash
```

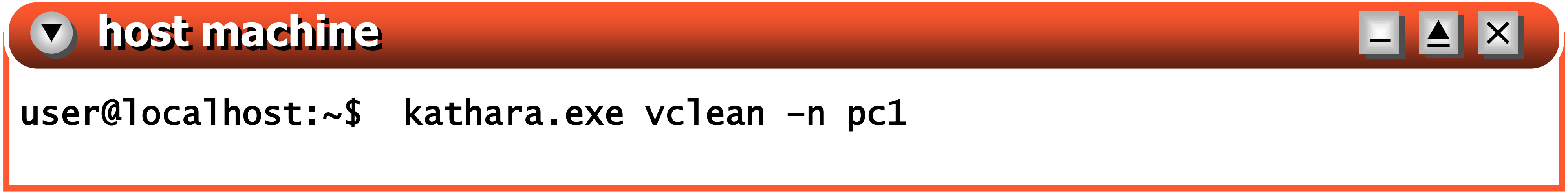
- **caution:** this is effective until you reboot the host operating system (your Windows 10)

step 10 – removing pc1 container

- from docker using `/bin/sh` by selecting delete button



- from host machine



```
user@localhost:~$  kathara.exe vclean -n pc1
```