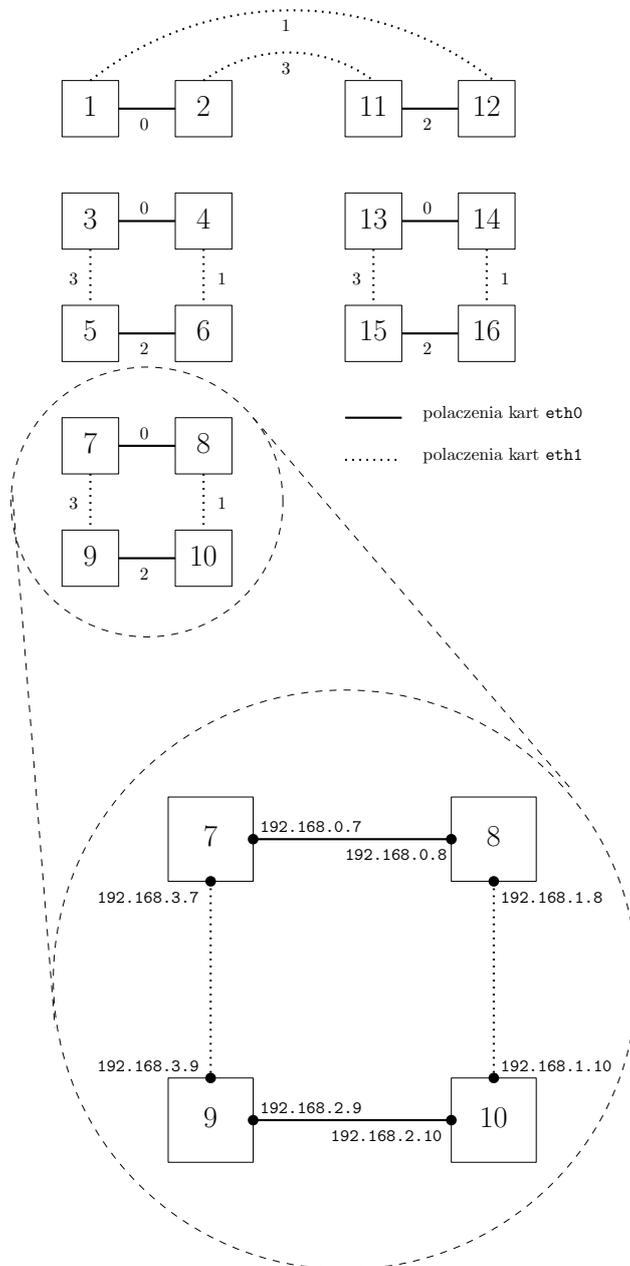


COMPUTER NETWORKS

LAB LIST 6

1 General remarks

The topology of the network for today's classes is depicted below. Each group of four hosts is an independent structure not connected with anything else.



The goal today is to configure RIP protocol on four computers. We use quagga, whose configuration is similar to Cisco routers configuration.

In the following tasks, the routing configuration commands should be given in the special program:

```
#> vtysh
```

It allows for command autocompletion using Tab. At any moment, you may press ? to display context help. The program works in two modes: *configuration mode* which we enter by executing:

```
#> configure terminal
```

and *command mode* (default mode after starting the program). In the configuration mode, some commands just traverse the configuration menu; to go one level up, type:

```
#> exit
```

To end the configuration mode and enter the command mode, type:

```
#> end
```

2 Exercises

Exercise 1. Run vtysh and enter the configuration mode by:

```
#> configure terminal
```

At the beginning configure network interfaces. Type:

```
#> interface eth0
```

to enter the mode of eth0 configuration. Assign it an IP and a subnet mask:

```
#> ip address 192.168. x. y/24
```

where *x* and *y* are as in the figure. From now on, this interface is active.

Exit the configuration menu by typing:

```
#> exit
```

...and configure interface eth1 analogously.

The current configuration can be check using `show interface` and `show interface description`. Remember that they have to be typed in the command mode. If you want to execute them in the configuration mode, you have to prepend them with word `do`.

Check also whether the changes were accepted by the kernel executing `ifconfig` in other terminal.

You may also display the current routing table: using `route -n` in the terminal and using `show ip router` in vtysh. It should contain the information about two directly connected networks.

Exercise 2. Now we enable RIP ver. 2 for the existing interfaces. First, run `wireshark` to observe exchanged packets. For configuring RIP enter appropriate menu, typing (in the configuration mode):

```
#> router rip
```

In the menu enable second version of the protocol:

```
#> version 2
```

Then activate RIP for both directly connected links using:

```
#> network 192.168. x.0/24
```

The current configuration can be always displayed by:

```
#> do show running-config
```

From now on, the RIP is working, which you may observe issuing (from time to time) commands:

```
#> do show ip rip
```

```
#> do show ip rip status
```

```
#> do show ip route
```

and observing packets in wireshark. Wait till the routing table reaches stable state and see the routing table in the Linux terminal typing `route -n`. Using `ping` and `traceroute`, check the reachability of the remaining (not directly connected) six interfaces.

Exercise 3. Disable one of the eight network cards. To this end, enter the interface configuration menu:

```
#> interface eth0
```

or:

```
#> interface eth1
```

and type:

```
#> shutdown
```

Again (using the `do show ...` commands above) observe what happens. Observe also packets in wireshark and execute commands `ping` and `traceroute`.

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