# Solution M4 (@tonytech)

*Please fill in your* ***SoftUni username*** *above. Name the file* ***M4-Solution****, prepare a compressed archive, and upload it to the* ***SoftUni*** *site*

### Solution Details

**CHECK:**

* **AlmaLinux / Debian**

**VM1 (Rila):** *https:\/\/courses.zahariev.pro\/check.php?20230930171714tHPkxgnuqz*

**VM2 (Pirin):** *https:\/\/courses.zahariev.pro\/check.php?20230930174843uXp0DoictT*

* **Debian / OpenSUSE**

**VM1 (Rila):** *https:\/\/courses.zahariev.pro\/check.php?20231001084633s6WeiwpDvf*

**VM2 (Pirin):** *https:\/\/courses.zahariev.pro\/check.php?20231001085032YF97wEeQdV*

Include the commands you used for every step. Also include the output if you like (either as pictures or as text)

**AlmaLinux / Debian**

**VM1 (Rila) - AlmaLinux**

1. Set one of the network cards with static IP **192.168.148.1/24** (and in the **same virtual network** as the only card of the other VM).

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* Create a new connection on interface name ens265.

[tonytech@rila ~]$ sudo nmcli connection add type ethernet ifname ens256 con-name homework\_m4

* Set static IP address on the new connection.

[tonytech@rila ~]$ sudo nmcli connection modify homework\_m4 ipv4.addresses 192.168.148.1/24 ipv4.method manual

* Force changes.

[tonytech@rila ~]$ sudo nmcli connection down homework\_m4; sudo nmcli connection up homework\_m4

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1. Install and configure **DHCP** with range from **192.168.148.50 – 192.168.148.59**. Make sure that you pass the **8.8.8.8** DNS server as an option as well either on global or subnet level.

* Update repositories

[tonytech@rila ~]$ sudo dnf update

* Install DHCP Server

[tonytech@rila ~]$ sudo dnf install dhcp-server

* Configure DHCP Server (subnet and options)

[tonytech@rila ~]$ sudo nano /etc/dhcp/dhcpd.conf

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* Test DHCP configuration

[tonytech@rila ~]$ sudo nano /etc/dhcp/dhcpd.conf

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* Start DHCP service

[tonytech@rila ~]$ sudo systemctl start dhcpd

* Made DHCP service to auto start

[tonytech@rila ~]$ sudo systemctl enable dhcpd

* Check status of DHCP service

[tonytech@rila ~]$ systemctl status dhcpd

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1. **SSH** service installed and running.

* Install SSH server and client

[tonytech@rila ~]$ sudo dnf install openssh-server openssh-clients

* Start SSH server

[tonytech@rila ~]$ sudo systemctl start sshd

* Check whether the SSH server is running

[tonytech@rila ~]$ sudo systemctl status sshd

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1. Firewall up and running, and allowing **SSH** connections.

* Check status of firewall

[tonytech@rila ~]$ systemctl status firewall

* Check SSH connections are allowed

[tonytech@rila ~]$ sudo firewall-cmd --list-services

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* + If not – add the port and reload firewall configuration

[tonytech@rila ~]$ sudo firewall-cmd --permanent --add-port=22/tcp

[tonytech@rila ~]$ sudo firewall-cmd –reload

1. Enabled **NAT** and forwarding functionality, so the internal station can have access to Internet

* Check firewall zones

[tonytech@rila ~]$ sudo firewall-cmd --get-zones

* Add VM NAT ethernet adapter in external zone

[tonytech@rila ~]$ sudo nmcli connection modify ens160 connection.zone external

* Add other VM ethernet adapter in trusted zone

[tonytech@rila ~]$ sudo nmcli connection modify homework\_m4 connection.zone trusted

* Check active zones and connections

[tonytech@rila ~]$ sudo nmcli connection modify homework\_m4 connection.zone trusted

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1. Register the **repos.zahariev.pro** repository *(check for details on* ***https://repos.zahariev.pro****)*

[tonytech@rila ~]$ sudo dnf config-manager --add-repo https://repos.zahariev.pro/dnf

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1. Install the **hello-lsa** package

[tonytech@rila ~]$ sudo dnf install --nogpgcheck hello-lsa

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Result for VM1:

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**VM2 (Pirin) - Debian**

1. Make sure that the network adapter is set to get its IP address via **DHCP**

tonytech@pirin:~$ sudo cat /etc/network/interfaces

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1. Create a user **homework** with password **Parolka3** and make it a **sudoer** *(part of the* ***admin****,* ***sudo****, or* ***wheel*** *group, depending on you distribution)*

* Create new user

tonytech@pirin:~$ sudo adduser homework

* Add user in sudoer

tonytech@pirin:~$ sudo usermod -aG sudo homework

* Check the user groups

tonytech@pirin:~$ groups homework

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1. **SSH** service installed and running but on port **50022** instead of the default (**22**)

* Edit SSH configuration

tonytech@pirin:~$ sudo nano /etc/ssh/sshd\_config

* Uncomment “Port 22” and change the port to 50022
* Restart SSH service

tonytech@pirin:~$ sudo systemctl restart ssh

1. Firewall up and running, and allowing **SSH** connections

* Install firewall (ufw)

tonytech@pirin:~$ sudo apt install ufw

* Enable firewall (ufw)

tonytech@pirin:~$ sudo ufw enable

* Allow new SSH port (50022/tcp)

tonytech@pirin:~$ sudo ufw allow 50022/tcp

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Result for VM2:

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**Debian / OpenSUSE**

**VM1 (Rila) - Debian**

1. Set one of the network cards with static IP **192.168.148.1/24** (and in the **same virtual network** as the only card of the other VM).

* Change hostname

tonytech@rila:~$ sudo hostnamectl set-hostname rila.lsa.lab

* Add new hostname in /etc/hosts to prevent the displaying “unable to resolve host rila.lsa.lab: Name or service not known”

tonytech@rila:~$ sudo nano /etc/hosts

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* Check the current state of interfaces.

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* Edit interfaces file and add configuration for second network interface

tonytech@rila:~$ sudo nano /etc/network/interfaces

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* Force the changes.

tonytech@rila:~$ sudo ifdown ens35; sudo ifup ens35

1. Install and configure **DHCP** with range from **192.168.148.50 – 192.168.148.59**. Make sure that you pass the **8.8.8.8** DNS server as an option as well either on global or subnet level

* Install DHCP Server

tonytech@rila:~$ sudo apt install isc-dhcp-server

* Configure DHCP Server

tonytech@rila:~$ sudo nano /etc/dhcp/dhcpd.conf

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* Test new configuration

tonytech@rila:~$ sudo dhcpd -t

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* Set default adapter for DHCP server.

tonytech@rila:~$ sudo nano /etc/default/isc-dhcp-server

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* Check DHCP service status.

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1. **SSH** service installed and running

tonytech@rila:~$ sudo systemctl is-active ssh

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1. Firewall up and running, and allowing **SSH** connections.

* Install firewall

tonytech@rila:~$ sudo apt install ufw

* Enable firewall

tonytech@rila:~$ sudo ufw enable

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* Allow SSH connections (22/tcp)

tonytech@rila:~$ sudo ufw allow 22/tcp

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1. Enabled **NAT** and forwarding functionality, so the internal station can have access to Internet.

* Change ufw configuration to allow forwarding (**DEFAULT\_FORWARD\_POLICY=”ACCEPT”)**

tonytech@rila:~$ sudo nano /etc/default/ufw

* Uncomment **net/ipv4/ip\_forward=1** in **/etc/ufw/sysctl.conf**

tonytech@rila:~$ sudo nano /etc/ufw/sysctl.conf

* Add rule in **/etc/ufw/before.rules**

tonytech@rila:~$ sudo nano /etc/ufw/before.rules

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* Reload firewall (ufw)

tonytech@rila:~$ sudo ufw disable && sudo ufw enable

1. Register the **repos.zahariev.pro** repository *(check for details on* [***https://repos.zahariev.pro***](https://repos.zahariev.pro)*)*

tonytech@rila:~$ echo "deb [arch=amd64] https://repos.zahariev.pro/apt stable main" | sudo tee /etc/apt/sources.list.d/zahariev-repo.list

1. Install the **hello-lsa** package

tonytech@rila:~$ sudo apt-get update --allow-insecure-repositories && sudo apt-get install hello-lsa

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Result for VM1 (Debian):

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**VM2 (Pirin) – OpenSUSE**

1. Make sure that the network adapter is set to get its IP address via **DHCP**

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tonytech@pirin:~> sudo cat /etc/sysconfig/network/ifcfg-eth0

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1. Create a user **homework** with password **Parolka3** and make it a **sudoer** *(part of the* ***admin****,* ***sudo****, or* ***wheel*** *group, depending on you distribution)*

* Create user

tonytech@pirin:~> sudo useradd -m homework

* Set password

tonytech@pirin:~> sudo passwd homework

* Add new user to **wheel**

tonytech@pirin:~> sudo usermod -aG wheel homework

1. **SSH** service installed and running but on port **50022** instead of the default (**22**)

* Open /etc/ssh/sshd\_config , uncomment row #Potr 22 and change port to 50022

tonytech@pirin:~> sudo nano /etc/ssh/sshd\_config

1. Firewall up and running, and allowing **SSH** connections

* Check the firewall

tonytech@pirin:~> sudo systemctl status firewalld

* Add firewall rule for new SSH port configuration

tonytech@pirin:~> sudo firewall-cmd --permanent --add-port=50022/tcp

* Reload firewall service

tonytech@pirin:~> sudo firewall-cmd --reload

Result for VM2 (OpenSUSE):

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