“Київський фаховий коледж зв’язку”

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**ЗВІТ ПО ВИКОНАННЮ**

# **WORK-CASE №3**

з дисципліни: «Операційні системи»

**Тема: «Робота з Virtual Box»**

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Перевірив викладач

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Завдання №1  
виконав Панчук О.С.

В робочому середовищі віртуальної машини Virtual Box необхідно виконати:

Клонування вашої віртуальної робочої Linux CentOS . Яким чином це

можна зробити? Продемонструйте всі етапи;

So there are two main steps in cloning a virtual machine. **The first step is**:

1. Open VirtualBox and select the virtual machine you want to clone from the VirtualBox Manager panel.
2. Right-click on the selected virtual machine and choose the "Clone" option from the context menu.
3. The Clone VM window will open, where you can configure settings for the new cloned virtual machine. Here are some important settings:

* Name and Operating System: Specify a name for the new virtual machine and select the type and version of the operating system.
* Machine Folder: Specify the folder where the cloned machine will be saved.
* Options: You might want to create a full copy of the virtual machine, including all disks and settings. In this case, make sure the "Reinitialize the MAC address of all network cards" option is unchecked.

1. After configuring all the necessary parameters, click "Create."
2. VirtualBox will create a clone of the virtual machine and display it in the list of virtual machines.
3. Now you can start the newly cloned virtual machine and work with it as you would with a regular CentOS virtual machine.

**The second** type of cloning in VirtualBox is using a command-line approach. This method can be useful for automating the cloning process or for scripting purposes.

Using the following command:

arduino

VBoxManage clonevm "existing\_vm\_name" --name "new\_vm\_name" --register

Where:

"existing\_vm\_name" is the name of the virtual machine you want to clone.

"new\_vm\_name" is the name you want to give to the newly cloned virtual тmachine.

This command will create a clone of the virtual machine and register it in VirtualBox. You can execute this command in the command-line interface o your operating system (e.g., in a Linux terminal or Windows command prompt). After running the command, the newly cloned virtual machine will be available in the VirtualBox Manager.

1.2 Може виникнути необхідність перенесення (клонування) ОС у інше

віртуальне середовище. Які треба виконати дії для експорту вашої

віртуальної робочої ОС?

Creating a Backup: It is always recommended to create a backup of the virtual machine before transferring or cloning it to prevent data loss.

Shutting Down the Virtual Machine: Ensure that your virtual machine is powered off or in a stopped state before beginning the export process.

Exporting the Virtual Machine:

In VirtualBox:

1. Open VirtualBox.
2. Select the virtual machine you want to export from the VirtualBox Manager panel.
3. Right-click on the selected virtual machine and choose the "Export" option.
4. Choose a path to save the import file and click "Next."
5. Configure export settings, which may include configuration, virtual disks, and more.
6. Click "Export" to start the export process.

In VMware (if using VMware):

In VMware, you can use the VMware vCenter Converter tool for converting and exporting the virtual machine.Copying the Exported File: After completing the export process, you will receive a file (typically with .ova or .ovf extension) containing the virtual machine and its configuration. Copy this file to the machine where you want to import the virtual machine.

Importing into Another Virtual Environment:

In VirtualBox:

1. Open VirtualBox on the target machine.
2. Select "File" -> "Import Appliance."
3. Choose the exported file and click "Next."
4. Configure import settings, which may include network configurations and virtual disk sizes.
5. Click "Import" to initiate the import process.

Starting the Virtual Machine: After successful import, you can start the new virtual machine in the new virtual environment.

This is a general process for transferring or cloning a virtual machine between virtual environments. Keep in mind that different virtual environments may have varying configurations and support different file formats, so some settings may change during the export-import process

Завдання №2

Виконав Панчук О.С.

В ході роботи одна робоча віртуальна машина може взаємодіяти з іншою.

Для цього необхідно між ними розгорнути мережу. Опишіть які типи

організації мережевих з’єднань підтримуються в середовищі віртуальних

машин, в чому особливість кожного з них:

● Трансляція мережевих адрес (NAT);

● Мережевий міст (Bridged);

● Віртуальний адаптер хоста (Host-only);

● Внутрішня мережа (Internal Network).

Network Address Translation (NAT):

* Feature: Provides virtual machines with access to the external network through NAT routing but does not allow other machines from the external network to directly connect to virtual machines.

Virtual machines in the internal network have access to the external network, but other machines cannot see them.

This mode is suitable for scenarios where virtual machines need internet access but should not be visible on the external network.

* Bridged Network:

Feature: Virtual machines receive IP addresses from the external network and behave like physical machines in that network.

Virtual machines can communicate with other machines in the physical network and can be accessed by other machines in the network.

This mode is best suited for scenarios where you need to provide virtual machines with full access to the external network as independent participants.

* Host-Only Adapter:

Feature: Virtual machines can communicate with each other and with the host system but do not have a connection to the external network.

This mode is useful for creating isolated virtual networks or for development and testing without an external connection.

* Internal Network:

Feature: Virtual machines can communicate with each other and are isolated from the external network.

This mode can be useful for creating internal networks for interactions between virtual machines but without access to the external world.

Each of these types of network connections has its advantages and disadvantages, and the choice depends on the specific requirements and scenarios of your project.

Завдання №3

*Виконав: Петрик С.С.*

Розгорніть мережу між вашою робочою ОС та її клоном (завдання 1):

● Продемонструйте базові команди для налаштування мережевих

параметрів ОС, поясніть, що вони виконують.

● Обидві ОС мають мати вихід у мережу Інтернет. Відкрийте браузер та

перегляньте будь-яке відео в youtube

● Налаштуйте та продемонструйте обмін повідомленнями між двома ОС по

локальній мережі. Які команди в терміналі при цьому необхідно ввести?

● Налаштуйте спільну мережеву папку для обох ОС. Спробуйте скопіювати

файли з цієї директорії в домашній каталог користувача (віртуальна

робоча ОС) та на робочій стіл (клон віртуальної робочої ОС).

**Step 1**: Configuring OS Network Parameters

1. Start both virtual machines (the working OS and its clone).
2. Open a terminal in both virtual machines and enter the following command to check the current network settings:

**ifconfig**

This command will display information about network interfaces and their current IP addresses.

1. To change network settings and assign static IP addresses (if not assigned automatically), open the configuration file for the network interface. For example, you may have a file **/etc/network/interfaces** for Debian-based systems or **/etc/sysconfig/network-scripts/ifcfg-eth**0 for CentOS.
2. Make changes to the configuration file for both virtual machines. Add the following lines (replace 192.168.1.X and 192.168.1.Y with the appropriate IP addresses for each machine):

**static ip\_address=192.168.1.X/24**

**static routers=192.168.1.1**

**static domain\_name\_servers=192.168.1.1**

Where X is the IP address of one machine, and Y is the other.

1. Restart the network interface using the following command:

**sudo systemctl restart networking # For Debian-based systems**

**sudo systemctl restart network # For CentOS**

**Step 2**: Providing Internet Access

1. Ensure that the "Network Address Translation" (NAT) option is enabled for both virtual machines in the VirtualBox network settings.
2. Launch a web browser on both virtual machines and browse any video on YouTube to confirm that they have internet access.

**Step 3**: Exchanging Messages between the Two OSes on the Local Network

1. Open a terminal on one of the virtual machines and enter the ping command to check the availability of the other machine:

**ping IP\_address\_of\_the\_other\_machine**

Where **IP\_address\_of\_the\_other\_machine** is the IP address of the second virtual machine.

1. To send messages from one machine to another, use the ssh or scp command if they are installed, or any other method of connecting between virtual machines using their IP addresses.

**Step 4:** Shared Network Folder

1. Configure a shared network folder for both virtual machines in VirtualBox:

* In VirtualBox Manager, select one of the virtual machines and go to its settings.
* In the "Shared Folders" section, add a new shared folder and specify the path to the folder on the host system and the name of the shared folder.

1. Start both virtual machines and follow these steps to access the shared network folder:

* Open a terminal in one of the virtual machines and enter the following command to mount the shared folder:

**sudo mount -t vboxsf Shared\_Folder\_Name /mount\_location**

Where Shared\_Folder\_Name is the name you specified for the shared folder in VirtualBox settings, and /mount\_location is the path on the virtuaд machinе where you want to mount the shared folder.

After that, you can browse and copy files between virtual machines and the shared network folder.

# **Завдання №4**

*виконав Петрик С.С.*

To exchange information between your primary operating system (e.g., Windows) and virtual operating systems, such as virtual machines, you can use various methods like shared folders, virtual disks, network shared resources, and so on. Here's how you can do it using a shared folder:

Creating a shared folder:

• On your main computer (Windows), create a new folder that you want to share with the virtual machine.

Configuring the virtual machine:

• Launch your virtual machine and navigate to its settings.

• In the virtual machine settings, select the option to add a shared folder.

Adding a shared folder to the virtual machine:

• Specify the path to the folder you created on the main computer and mark the options you need, such as automatic folder connection when the virtual machine starts.

Start the virtual machine:

• Launch the virtual machine, and you will see the shared folder as a disk on the desktop or in the "My Computer" section of the virtual machine.

Copying files:

• Now you can copy files between your main computer and the virtual machine by simply dragging and dropping files to or from the shared folder.

Conclusion: In this work, the following aspects of working with virtual machines were explored:

• Cloning and exporting VMs

• Network connections between VMs

• Working with networking between VMs

• Exchanging information with the main OS