Lab 5: VM migration

Required software
Download the following software and images that are used for the lab:
- [VMware Workstation 15 Pro](#) (if your host OS is Linux or Windows). It is used as a desktop hypervisor.
- [VMware Fusion 11 Pro](#) (if your host OS is Mac). It is used as a desktop hypervisor.
- [VMware vSphere Hypervisor (ESXi) 6.7U3](#) as a VM of the desktop hypervisor
- [VMware vCenter Server Appliance 6.7](#) (1 VM, deployed as a virtual appliance)
- [Ubuntu Server 18.04 LTS](#) for installing on a nested VM

Note: Check the integrity of images using a hash sum (e.g. md5sum)

You need to create a VMware account for downloading the installation image and use this software for an appropriate period of time; this process is free.

To avoid confusion in VMware terms, read this article: [The Difference Between vSphere, ESXi, and vCenter](#).

Requirements justification
Total lab hardware and software requirements are based on the following minimum requirements:
- ESXi needs at least 4 GB of RAM (8 GB or more are recommended); 2 CPU cores.
- vCenter Server needs at least 8 GB of RAM; 2 CPU cores.
- Your host operating system needs at least 4 GB of RAM to work properly
- VMware Workstation needs at least 2 GB of RAM (4 GB or more are recommended)

Note: All of the following settings and examples will apply to Linux (Ubuntu 16.04). The main concepts for other OSes (Mac and Windows) are identical.

Exercise 0. Enabling Intel VT and AMD-V virtualization hardware extensions in BIOS
Note: Many of the steps below may vary depending on your motherboard, processor type, chipset and OEM. Refer to your system's accompanying documentation for the correct information on configuring your system.

1. Power on the machine and open the BIOS. This can usually be done by pressing the **Delete** key, the **F1** key or **Alt** and **F4** keys depending on the system.
2. Open the **Processor** submenu. The processor settings menu may be hidden in the **Chipset**, **Advanced CPU Configuration** or **Northbridge**.
3. Enable **Intel Virtualization Technology** (also known as **Intel VT**) or **AMD-V** depending on the brand of the processor. The virtualization extensions may be labeled **Virtualization Extensions**, **Vanderpool** or various other names depending on the OEM and system BIOS.
4. Enable Intel **VTd** or **AMD IOMMU**, if options are available. Intel VTd and AMD IOMMU are used for PCI passthrough.
5. Turn off **Secure boot**
6. Select **Save & Exit**.
7. Reboot the machine.

Exercise 1. Installing and configuring VMware Workstation on Linux

1. GNU C Compiler must be installed before running VMware Workstation. In order to install this compiler, execute the command:

   ```
   $ sudo apt-get -y install gcc make linux-headers-$(uname -r)
   dkms
   ```

2. Go to the directory where you saved the downloaded installer file. Make the installer file executable:
   ```
   $ sudo chmod +x
   ./VMware-Workstation-Full-15.5.0-14665864.x86_64.bundle
   ```

3. Run the VMware Workstation Linux installer:

   ```
   $ sudo
   ./VMware-Workstation-Full-15.5.0-14665864.x86_64.bundle
   ```

4. After a successful installation, launch VMWare Workstation in the terminal:

   ```
   $ sudo vmware
   ```
   Note: Always launch VMWare Workstation using the command above.

5. Answer the questions provided by the wizard and click Next for switching to the next step:
   - Accept the license agreement.
   - Would you like to join the VMware Customer Experience Improvement Program? Select **Yes** or **No**.
   - Enter the user that will initially connect to the Workstation Server. Type the user name of the account you are using in Linux.
   - Choose a directory for your shared virtual machines, for example, ***/var/lib/VMware/SharedVMs***
   - Enter the port to use for HTTPS access to Workstation Server (***443*** by default).
   - Enter the license key. Keep this field empty for the free trial mode.
   - The product is ready to be installed.
   - Enter the host user password to authenticate your action if requested.

Q1: What hypervisor type VMware Workstation (or Fusion) you installed ?

Exercise 2. Deploying a VM Running ESXi on VMware Workstation

Exercise 2.1. Creating a VM
Create a new virtual machine in VMware Workstation. Click **File > New Virtual Machine**. The new virtual machine wizard appears.
1. On the Welcome screen select **Custom (advanced)**
2. Choose the Virtual Machine Hardware Compatibility. Select **Workstation 15.x**
3. Guest Operating System Installation. Select the **Use ISO image** and browse the ESXi installer iso file. Click **Next**.
4. Select a Guest Operating System. Select **VMware ESX**, then select **VMware ESXi 6.x** in the drop-down menu and click Next.

5. Name the Virtual Machine. Enter the VM name, for example, *VMware ESXi 6.7.* Select the VM location.

6. Processor Configuration. Specify the following parameters:
   - Number of processors: 2
   - Number of Cores per processor: 1

   If you use 1 CPU with 1 core, the ESXi installer displays an error during installation.
7. Memory for the Virtual Machine. Specify the amount of memory equal to **4096 MB**.
8. Network Type. Select **Use network address translation (NAT)**.
9. Select I/O Controller Types. Select **Paravirtualized SCSI (Recommended)**.
10. Select a Disk Type. Select **SCSI (Recommended)** as a disk type.
11. Select a Disk. Click **Create a new virtual disk**.
12. Specify Disk Capacity. Set **maximum disk size** to **40 GB**. Select **Store virtual disk as a single file**.
13. Specify Disk File. Enter the VM name, for example, *VMware ESXi 6.7.vmdk*
14. Ready to Create Virtual Machine. Check your VM settings and click **Finish** to create the VM.

Exercise 2.2. Installing ESXi on a VM

After finishing configuration in the wizard, a VM should be powered on automatically. The VM boots from the ISO image and you can see the ESXi installer interface.
1. On the Welcome screen press **Enter**.
2. Read and accept the End User License Agreement (EULA). Press **F11** to continue.
3. Select a disk to install or upgrade. Select your 40GB virtual disk created before.
4. Select a keyboard layout. US Default is selected in this particular case.
5. Enter a root password. Confirm the root password.
6. On the Confirm Install screen press **F11** to start the installation.
7. When installation is complete, press **Enter** to reboot.
8. Once ESXi have been installed, shutdown the VMware ESXi by pressing **F12**. Enter an authorized login name and password, and press **Enter**. Press **F2** to turn off.
   Note: To return to your computer from VM window, press Ctrl-Alt
9. Take the snapshot of the ESXi VM:
   - Right click on the VMware ESXi and select **Snapshot>Take snapshot…**
   - Enter the name *InitialSetup* and press **OK**

Q2: What hypervisor type VMware ESXi you installed?

Exercise 2.3. Editing VM settings and configuring network

VMware Workstation provides you with a virtual network editor with which you can configure your virtual networks such as *NAT* and *Host-Only* networks. Moreover, you can create more *NAT* and *Host-Only* networks and assign the network addresses, virtual gateways and virtual DHCP servers for them.

In *NAT* mode, virtual machines are connected to a private network behind the *NAT*. The *NAT* network allows VMs to communicate with each other, a host machine and other hosts with which the host machine can communicate outside the VM *NAT* network.

A host machine can communicate with VMs, but other hosts outside of the *NAT* network cannot communicate with such VMs in this way. A default name for the *NAT* network is **VMNet8**. A virtual network adapter is added to the host operating system when a *NAT* network is added.

A built-in virtual router and DHCP Server are used by VMware products in order to establish the *NAT* network connection for VMs.

1. Open a *Virtual Network Editor* by clicking **Edit > Virtual Network Editor**.
2. Enter the host user password to authenticate your action if requested.
3. Define the following network configuration in **VMnet8 (NAT network)**:
   - Subnet IP: **192.168.101.0**
   - Subnet mask: **255.255.255.0**
   - Gateway IP: **192.168.101.2**
   - DHCP: **yes**

   In order to configure gateway hit the **NAT Settings** button.
4. Click **Save** to save the changes.

Exercise 2.4. Basic ESXi Configuration
1. Power on the VM on which you installed ESXi.
2. As you can see, a virtual DHCP server for the VMnet8 virtual network works properly, and the IP address is obtained automatically (192.168.101.x). However, we recommend that you set IP addresses for servers manually.
3. Press **F2** to customize the system. Type ESXi root password and press **Enter**.
4. Select **Configure Management Network** in the System Customization menu and press **Enter**.
5. Select **IPv4 Configuration** in the Configure Management Network menu. In this menu select **Set static IPv4 address and network configuration**.
   - IPv4 address: 192.168.101.101
   - Subnet Mask: 255.255.255.0
   - Default Gateway: 192.168.101.2
6. Press **Enter** to apply changes.
7. Press **Esc** and then **Y** to apply changes and restart management network.
8. Go to the **Troubleshooting Options**, then enable **ESXi Shell** and **SSH**. Enabling these options allows you to manage the ESXi Server with a local console or remotely via SSH.
9. Press **Esc** twice.
10. Go to your host machine by pressing **Ctrl-Alt**
11. Open a web browser and enter **https://192.168.101.101** in the address bar.
12. Confirm security exception and you will see the login page of VMware Host Client with which you can manage your ESXi host.
13. Enter the login and password you have specified during ESXi installation.
14. After your login, VMware asks you whether you want to help improve the VMware Host Client. Tick the check box if you want and click **OK**.
15. Enable NTP service on ESXi server:
    - Go to **Host>Manage>System>Time & date>Edit settings**
    - Select **Use Network Time Protocol (enable NTP client)**
    - Set **Start and stop with host** in **NTP service startup policy** field
    - Add the following NTP server: **0.ru.pool.ntp.org**
    - Click **Save** button
    - Start NTP service: **Actions>NTP service>Start**
16. Synchronize host time with your VM time.
    Open terminal of your host machine and run:

    ```
    $ sudo timedatectl set-timezone UTC
    ```

17. Shutdown the VMware ESXi by pressing **F12**. Enter an authorized login name and password, and press **Enter**. Press **F2** to turn off.

18. Take the snapshot of the ESXi VM:
    - Right click on the VMware ESXi and select **Snapshot>Take snapshot…**
    - Enter the name *InitialConfiguration* and press **OK**
19. Power on VMware ESXi VM and wait until it is fully loaded.

Exercise 3. Deploying vCenter Server

After configuring the VM as ESXi host, you are ready to deploy VMware vCenter Server for managing your ESXi hypervisor centrally.

Exercise 3.1. Configuring the name resolution service.

vCenter needs a configured DNS server with **A** and **PTR** records for resolving host names to IP addresses and inversely. This is not the same DNS server that is defined for connecting outside your local network (to Internet, for example) in this case.

In the lab setup the following host names are used for the hosts:
- The virtual network interface of the host machine used for connecting to a VMnet8 (NAT network) - *192.168.101.1* as *localdns.localdomain*
- The network interface of ESXi Server running as a VM: *192.168.101.101* as *esxi.localdomain*
- The network interface of vCenter Server running as a VM: *192.168.101.103* as *vcenter6-7.localdomain*

It is better to configure a fully-functioning DNS server in the local area network of a production environment for deploying VMware vSphere. But if you don't have a DNS server, you should configure **Dnsmasq** service and change configuration in your host and VM system files.

1. Install Dnsmasq
```
$ sudo apt update && sudo apt -y upgrade
$ sudo apt -y install dnsmasq
```

2. Configure Dnsmasq
```
$ sudo vim /etc/dnsmasq.conf
# line 19: uncomment (never forward plain names)
domain-needed
# line 21: uncomment (never forward addresses in the
non-routed address spaces)
bogus-priv
# line 53: uncomment (query with each server strictly in the
order in resolv.conf)
strict-order
# line 135: uncomment (add domain name automatically)
expand-hosts
# line 144: add (define domain name)
domain=localdns.localdomain

$ sudo systemctl start dnsmasq
```

3. For DNS records, add them in **/etc/hosts**.Then, *Dnsmasq* will answer to the queries from clients.
```
$ sudo vim /etc/hosts
# add records
192.168.101.103 vcenter6-7.localdomain
192.168.101.103 vcenter6-7
192.168.101.101 esxi.localdomain
192.168.101.101 esxi
```

```
192.168.101.1 localdns.localdomain
192.168.101.1 localdns
$ sudo systemctl restart dnsmasq
```

4. When Dnsmasq is running, fixed value "`127.0.0.1`" is added in **/etc/resolv.conf** and also the value of "`dns-nameservers`" in **/etc/network/interfaces** is added and managed in **/var/run/dnsmasq/resolv.conf**.
   Change DNS setting:

```
$ sudo vim /etc/network/interfaces
# change DNS setting to Dnsmasq Server
dns-nameservers 192.168.101.1

$ sudo systemctl restart ifup@vmnet8
```

5. Verify to resolve Name or IP address from a client in internal network:

```
$ dig vcenter6-7.localdomain
...
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 29408
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0,
ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1280
;; QUESTION SECTION:
;vcenter6-7.localdomain.        IN    A

;; ANSWER SECTION:
vcenter6-7.localdomain.  0    IN    A    192.168.101.103
...

$ dig -x 192.168.101.101
...
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 62466
;; flags: qr aa rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0,
ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1280
;; QUESTION SECTION:
;101.101.168.192.in-addr.arpa.      IN    PTR

;; ANSWER SECTION:
101.101.168.192.in-addr.arpa. 0    IN    PTR
esxi.localdomain.
...
```

Exercise 3.2. Deploying the OVA template

1. Open the VMware vCenter Server ISO file (the name of the downloaded file is *VMware-VCSA-all-6.7.0-14367737.iso* in this example) or mount it to a virtual CD/DVD drive.

2. Copy the VCSA OVA template (the name of the file is *VMware-vCenter-Server-Appliance-6.7.0.40000-14367737_OVF10.ova* in this example) from the *vcsa* directory of the ISO image to a custom directory on your physical machine (vCenter Server appliance is a partially configured distribution built on a Linux basis that is called a Photon OS).
3. In the graphical user interface of VMware Workstation select **File > Open** and select the extracted OVA template file (*VMware-vCenter-Server-Appliance-6.7.0.40000-14367737_OVF10.ova*).
4. A pop-up window with EULA (End User License Agreement) is displayed (the OVA import wizard is opened). Tick the check box "*I accept the terms of the license agreement*".
5. Provide a name **vCenter6-7** and logical storage path for the new virtual machine.
6. Select deployment options. At this step select the **Tiny vCenter Server with Embedded PSC** option that will be enough for this lab.
7. Set the additional properties for this virtual machine. This screen contains multiple menu entries that must be configured. After configuring one menu entry, click another string for configuring the remaining parameters. Drag your mouse over the "**i**" icon on the right side of the window for reading useful tips.
   Networking Configuration:
   ● Host Network IP address Family: **IPv4**
   ● Host Network Mode: **static**
   ● Host Network IP Address: **192.168.101.103**
   ● Host Network Prefix: **24**
     Note: In the binary format the /24 mask is 11111111.11111111.11111111.00000000 (24 ones) that is the same as 255.255.255.0 in a decimal format.
   ● Host Network Default Gateway: **192.168.101.2**
   ● Host Network DNS Servers: **192.168.101.1**
   ● Host Network Identity: **vcenter6-7.localdomain** (enter the FQDN – a fully qualified domain name).
   SSO Configuration. Enter the password given to the Administrator account that will be used for Single Sign On.
   System Configuration. Enter the root password and confirm this password. This password will be used for console login.
   Upgrade Configuration. The parameters of this sub-menu must be configured if you wish to upgrade the existing VMware vCenter Server. Skip configuring this category of parameters if you deploy a fresh vCenter instance.
   Miscellaneous. You can skip configuring this category of parameters.
   Networking Properties. Enter the domain name. In the current example, the default *localdomain* name is used.
8. Press **Import** to start deploying the vCenter VM from the OVA template.
9. After deploying is complete, the VM is started automatically. The blue-gray management interface is similar to the yellow-gray ESXi management interface.

Exercise 3.3. Checking configuration
1. Check the network settings.

   The Static IP Configuration has already been done by you with the OVA deployment wizard. You can check the IP configuration to make sure that network settings are configured correctly inside the VM.

   By default, the virtual network adapter of your VM running vCenter may be connected to a network that is distinct from your NAT network (for example, your

vCenter VM may be connected to a VMnet0 Bridged network that is not used by any of your VMs).
- In the interface of VMware Workstation, click **VM > Settings**.
- In the **Hardware** tab choose your network adapter and select **NAT** (much like as you had configured for the VM running ESXi).
- Press the **Save** button.
- Open the console on your physical machine and ping your vCenter Server IP address (**ping 192.168.101.103** command) to make sure that the network works properly for your VM running vCenter.

2. Check the name resolution in the VM running vCenter Server Appliance .
- Open the blue-gray management interface of the vCenter Server Appliance in VMware Workstation.
- Press **CTRL+ALT+F3** to enter console.
- Log in the console as the root user (use the password you have specified during deploying vCenter from the OVA template).
- Enable shell by entering the command:

```
> shell.set --enabled true
```

- Enter shell by using the command:

```
> shell
```

- Check if the nameserver is present in the resolv.conf file of VCSA:

```
# cat /etc/resolv.conf
...
nameserver 192.168.101.1
```

- Check availability of the host nameserver:

```
# ping 192.168.101.1
PING 192.168.101.1 (192.168.101.1) 56(84) bytes of data.
64 bytes from 192.168.101.1: icmp_seq=1 ttl=64
time=0.073 ms
...
```

- Check the name resolution:

```
# nslookup vcenter6-7.localdomain
...
Name:      vcenter6-7.localdomain
Address: 192.168.101.103

# dig -x 192.168.101.103
...
;; QUESTION SECTION:
;103.101.168.192.in-addr.arpa.      IN    PTR

;; ANSWER SECTION:
103.101.168.192.in-addr.arpa. 0    IN    PTR
vcenter6-7.localdomain.
```

3. Return to the blue-gray management interface by pressing **CTRL+ALT+F2**.
4. Shutdown the VMware vCenter by pressing **F12**. Enter an authorized login name and password, and press **Enter**. Press **F2** to turn off.
5. Take the snapshot of the vCenter6-7 VM:
   - Right click on the vCenter6-7 and select **Snapshot>Take snapshot…**
   - Enter the name *InitialSetup* and press **OK**
6. Power on vCenter6-7 VM and wait until it is fully loaded.

Exercise 3.4. Finishing deploying vCenter
Now that you have deployed your vCenter Server, you should do the rest of VCSA (vCenter Server Appliance) configuration.
1. Make sure that your VMs running vCenter and ESXi servers are functioning.
2. Enter the IP address of your vCenter Server in the address bar of the browser (**https://192.168.101.103:5480** in this case) to continue configuring vCenter.
3. Confirm security exception and you will see the Getting Started page.
4. In the Getting Started screen press the **Set up** icon to configure this appliance as a new vCenter Server.
5. Enter the root password you have specified during VCSA installation to proceed. The Stage 2 installation wizard is opened.
6. **Introduction**. On this screen click **Next**.
7. **Appliance configuration**. Set the network configuration (see the network configuration you have set while deploying the OVA template) and enable **SSH access**.
8. **SSO configuration**. Click **Create a new SSO domain**. You can use the default *vsphere.local* domain name. Set the Single Sign On password for administrator and confirm the password.
9. **Configure CEIP**. Tick the check box if you want to join the VMware Customer Experience Program.
10. **Ready to complete**. Review your settings and hit **Finish** to finalize deploying vCenter.
11. Confirm your actions by clicking **OK**.
12. Look at the progress bar and wait until the installation process finishes.

Exercise 3.5. Centralized vSphere management with vCenter
1. Now you can log in to vCenter with VMware vSphere Client. Enter the IP address of your vCenter Server into an address bar of your web browser (https://192.168.101.103/ in this case).
2. The introduction web page is loaded where you should select one of two options:
   - Launch vSphere Client (HTML5)
   - Launch vSphere Web Client (FLEX)
3. Use the HTML5 Client. On the VMware Single Sign-On page enter the user name (**administrator@vsphere.local**) and the password you have previously specified.

Exercise 3.6. Create a new datacenter
Once you have logged in VMware vSphere client, you will see nothing in the vCenter inventory. First of all, you should add a new datacenter that is a logical container (directory) where your hosts and clusters are placed.
1. Add a new datacenter, click **Actions > New Datacenter**.
2. Enter the datacenter name, for example *Datacenter1*.
3. Add your ESXi host to the datacenter. Right-click your datacenter name and hit **Add Host** in the context menu. Your VM running ESXi must be powered on.
4. The Add Host wizard is opened.

Name and location. Enter the IP address of the ESXi host you want to add. In our example the IP address of the added host is **192.168.101.101**.

Connection settings. Select the user name and password you have specified during ESXi installation (the **root** user is used here). Hit **Yes** if a certificate security alert is displayed.

Host summary. Review the summary of the host.

Assign the license. The evaluation *n*-day license is used for all VMware products. Hence, you don't need to change anything on this screen.

Lockdown Mode. Select the **Disabled** option to keep the ability to manage the ESXi host without vCenter Server.

VM location. Select the datacenter where your VMs will be stored after creation. As there is only one datacenter at this moment, you should not change anything on this screen.

Ready to complete. Check the configuration summary and hit **Finish** to add the host.

Wait for a few seconds until your ESXi host is connected to vCenter Server. ESXi Server is now added to the vCenter Server inventory.

Exercise 4. Deploying a Nested VM on a Virtual ESXi Host

Create a new virtual machine on a virtual VMware ESXi host. This will be a nested VM.

Note: There are three methods of creating a new VM available. A new VM can be created with vCenter by using VMware vSphere Client, with VMware Host client (creating a new VM by using standalone ESXi host managing tools) and with VMware Workstation by connecting to vCenter or ESXi host in the interface of VMware Workstation.

1. Insert an ISO installation image of the Ubuntu Server 18.04 LTS operating system on your virtual ESXi host into the virtual CD/DVD drive of the VM running ESXi. In order to insert the installation ISO image into a virtual optical drive, select your VM running ESXi (VMware ESXi 6.7 in this case), and click **VM > Settings** in the VMware Workstation interface.
2. In the Virtual Machine Settings window, select **CD/DVD**, select the **Use ISO image file** option, and select the ISO bootable installation image (click **Browse** to navigate your file system for selecting the ISO file).
3. When the ISO installation media is inserted into an optical drive of your virtual ESXi host, open VMware vSphere client and select your ESXi host in the vCenter inventory. **Right-click** the ESXi host and in the **Actions** menu select **New Virtual Machine**.
4. A *New Virtual Machine Wizard* is open:
   Select a creation type. Choose **Create a new virtual machine**.
   Select a name and folder. Enter your virtual machine name, for example *UbuntuServer18*, select your datacenter (the *Datacenter1* is the only datacenter available at this moment in this example).
   Select a compute resource. Select your ESXi host (that has the IP address 192.168.101.101 is selected in this example).
   Select storage. Select the datastore you have created when configuring the ESXi host. In this case, the *datastore1* is available.
   Select compatibility. Select ESXi 6.0 and later compatibility for this example.
   Select a guest OS. As Ubuntu Server 18.04 64-bit is used as a guest OS for the VM that is deployed, the Guest OS family must be Linux and the Guest OS version must be Ubuntu Linux (64-bit).
   Customize hardware. This step includes many settings. Be attentive and edit the settings as following:

- CPU: 1
- Memory: 1 GB
- New Hard Disk: 10 GB, **Thin Provision** (click your new hard disk to expand the list of settings).
- New CD/DVD Drive: **Host Device**, select **Connect at power on**.

Ready to complete. Check the configuration summary and hit Finish to start VM creation.

5. Your VM has now been created. In order to install a guest OS, select the VM and start the VM (**Actions > Power > Power On**).
6. Select **Launch Web Console** to see the image displayed by a "virtual monitor" connected to a VM.
7. Install Ubuntu Server 18.04 LTS on a VM as usual. During installation choose **Install OpenSSH server**.
8. After installing Linux, verify if your Linux has Internet access with the following commands.

```
$ ping vmware.com
```

A virtual network adapter had to obtain an IP address via DHCP and Internet connection had to work properly for this nested VM running in the VMware ESXi.

Q3: What level of virtualization are you at?

Note: You can connect to a VM not only with Web Console. You can also connect to a VM with VMware Workstation. The advantage to this method is that you can set a higher resolution to be displayed by a VM running on an ESXi host remotely (the maximum resolution displayed in Web Console of VMware vSphere (Web) Client is 1152 X 864. In order to connect to a remote VM running on an ESXi host, you should connect to the ESXi server or vCenter that manages that particular ESXi server by clicking **File > Conect to server** in the interface of VMware Workstation.

Thus, at this moment, most of the components of the lab are configured:
- Workstation
- Virtual networks
- ESXi
- vCenter
- A guest Linux VM (a nested VM) running on ESXi.

Now all you have to do is migrate your Ubuntu Server 18.04 LTS virtual machine to Amazon EC2 Using AWS Connector for vCenter.

Assignment
Migrate Your Virtual Machine to Amazon EC2 Using AWS Connector for vCenter.

In Moodle, submit the report in **pdf** format and include the following sections in it:
1. Answers on questions
2. Screenshots:
   - VMware Workstation (or Fusion) with ESXi and vCenter VMs
   - Virtual Machine panel on the ESXi client web interface
   - ESXi host panel with VMs on vSphere vCenter client web interface
   - AWS Server Migration Service status page from AWS connector VM
   - Launched your migrated instances on AWS console

Do not forget to clean up AWS test resources when you're done using them.