Unix Training Academy Lab Manager™ version 1.0-beta (Windows Edition)

User Guide

1. Install Oracle VirtualBox for Windows
    a. Visit www.virtualbox.org. Download the latest VirtualBox installer for Windows
    b. Run the downloaded file to install VirtualBox in your Windows PC.
2. Install Vagrant
    a. Visit https://developer.hashicorp.com/vagrant/install. Download the Windows .msi installer under the 'Binary / AMD64' label.
    b. Run the downloaded file to install Vagrant in your Windows PC.
3. Start Windows PowerShell as an Administrator (right-click the Windows Start button, then click **Windows PowerShell (Admin)**.
4. Download the Lab Manager code (*Vagrantfile*) into your project directory, from: *https://github.com/ecigwegbu/vagrant/blob/main/uta-lab-manager/Vagrantfile*

   (You will see a download button with a tool-tip that says 'Download raw file'.)

5. Be sure to copy the downloaded file to your project directory in Windows (you should have one directory where you do any project from; the choice is yours but that is your project directory). Make sure the file downloaded is named exactly *Vagrantfile* (note: no extension).

6. Now you are ready to provision your servers by running the *Vagrantfile* script (this process is known as *IaC* – Infrastructure as Code). Make sure your pc is connected to power, you have adequate Internet connection and at least 10 GB of data if you are on mobile data. The provisioning process could take up to 30 minutes depending on your network speed.

7. To provision the workstation and two other servers (the default), run the command:

   ```
   vagrant up
   ```

   Enter your Red Hat Subscription Manager username and password when prompted.

8. To provision any other number of servers e.g. workstation plus 4 other servers, use this command instead:

   ```
   $env:MANAGED_HOSTS=4; vagrant up
   ```
   (note that $ is part of the command)

9. The Lab Manager remembers the last used number of managed hosts. It also remembers your last used Red Hat Subscription Manager username and password. To use a new set of username and password, and override the cached ones, provide it on the command line, thus:

```
$env:REDHAT_USERNAME='your-redhat-username'; REDHAT_PASSWORD='your-redhat-password';
$env:MANAGED_HOSTS=4; vagrant up
```

10. To simply use the last used values or defaults again:

```
vagrant up
```

Important: if your Red Hat Subscription Manager username or password is incorrect, the server provisioning scripts will fail and your task will become more difficult as you will need to roll back the entire process. So, make sure you double-check them. If you do not enter your username or password, the provisioning process will be aborted as it will not be possible to install key required packages from the Red Hat Repository.
Note: The password we are talking about here is not the 'student' or 'redhat' that you use to log into your lab VM, but the password you use on Red Hat's website.

11. Once provisioning is over, you can use Putty to connect to any of the servers (see the table below):

		workstation	**servera**	**serverb**	**serverc**	**serverd**	etc
IP Address		192.168.56.10	192.168.56.11	192.168.56.12	192.168.56.13	192.168.56.14	
SSH Port Forwarding	**SSH Port (Host)**	2263	2264	2265	2266	2267	
	SSH Port (Guest)	22	22	22	22	22	
LOGIN from Windows	**user student**	client: putty; pwd: student	client: putty; pwd: student	client: putty; pwd: student	client: putty; pwd: student	client: putty; pwd: student	
	user ansible	client: putty; pwd: ansible	client: putty; pwd: ansible	client: putty; pwd: ansible	client: putty; pwd: ansible	client: putty; pwd: ansible	
	user vagrant	pwd (vagrant) or SSH priv. key (pem)	pwd (vagrant) or SSH priv. key (pem)	pwd (vagrant) or SSH priv. key (pem)	pwd (vagrant) or SSH priv. key (pem)	pwd (vagrant) or SSH priv. key (pem)	
SSH priv key loc	**user vagrant**	./.vagrant/machines/<server-name>/virtualbox/private_key					

More Information:

The first time you run *Vagrantfile*, it may automatically download the box image from its online repository, so the process may take longer than usual. This image is a Vagrant-specific box image for the VirtualBox provider (e.g. 'generic/rhel9' available from Vagrant Hub). (Note: A Red Hat .iso image is not required.)

Once the provisioning ends, you can use an SSH client like Putty to connect from Windows to any of the servers, and as any of the three users - *student*, *ansible* or *vagrant*. The servers' ip addresses are: 192.168.56.10 (workstation), 192.168.56.11 (servera), 192.168.56.12 (serverb) etc. In addition, user *vagrant* can also connect password-less from PowerShell using the *pem* private key stored at:

'.vagrant\machines\<server-name>\virtualbox\private_key'

(Note: Only user vagrant has key-based SSH login from Windows, using a client like Putty.)

You can also connect to any of the servers using the default *vagrant* account from PowerShell:

vagrant ssh workstation

You will be automatically logged in as user *vagrant* (password not required). Once logged in, you can *su* to user *student* or *ansible* and can then freely ssh from one server to another as user *student* or *ansible*. It is recommended to use user student for all routine tasks.

My recommended approach is to login directly as user *student*, and password student, using Putty.

Users *student* and *ansible* have password-based login from the Windows host using Putty (for example), and can do ssh password-less key-based connections from any VM to any of the provisioned VMs once logged into any VM.

To end a session without destroying the servers:

vagrant suspend (to save/suspend the VM; recommended, at end of the day),

or

vagrant halt (to power off the VM)

Warning: Do NOT run 'vagrant destroy' unless you wish to destroy the VMs (e.g. at the end of a project/course after backing up your data)

To resume a suspended VM: vagrant resume

To restart a halted VM: vagrant up

To halt and restart a VM: vagrant reload

For help using vagrant: vagrant -h

For updates, checkout: GitHub: https://github.com/ecigwegbu/vagrant/blob/main/uta-lab-manager/Vagrantfile

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