# Classroom Training

# Virtual Machine Guide

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This document is the property of:

Pegasystems Inc.
One Rogers Street
Cambridge, MA 02142-1209
USA
Phone: 617-374-9600 Fax: (617) 374-9620
www.pega.com

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# Classroom Training

Virtual Machine Guide


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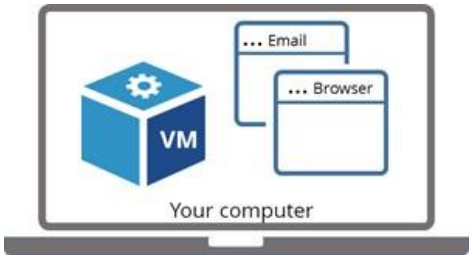
# Introduction

Many Pega classroom courses provide a virtual machine (VM) for you to download and use on your computer to complete the exercises that accompany the course. This option is a useful addition for those who wish to practice during and after a course, to hone their Pega skills.




A VM is a program that allows you to run another operating system on your computer by sharing its hardware.
The virtual machine or 'guest' runs on your computer, the 'host' just like any other software program.

The VM allows you to practice using Pega's software and solutions on Windows, macOS, or Linux without having to install or configure the guest's software; dB, web server, email client, Pega, etc. The VM runs on your computer, under your control, making it an excellent environment for learning how to build Pega applications on your own time, offline, and at your convenience.

## Virtual Machine archives

The VM is made available as an industry-standard OVA (Open Virtualization Archive) file that contains a compressed, installable version of a virtual machine. You use your virtualization software program to open / import and extract the OVA file. Think of the OVA as being the content and the virtualization software as the player that starts, stops, and manages the VM.

There are many benefits to running VMs, as well as those already mentioned.

- You can run as many as your host system's hardware will support.
- You can keep a library of different versions at your fingertips
- You can take snapshots to easily 'rewind and replay' as you learn
- You can 'expose' the VM to the outside world, to access it from other PC's if desired
- Our VMs include useful software in addition to Pega itself so that you can dig deeper
- You can install your own additional software to experiment and expand your learning

# System Requirements

To use the VM effectively, you will need a PC that meets the following requirements:

## Hardware

- 64-bit capable CPU, with virtualization, enabled in the BIOS[1]
- Minimum 12 GB RAM free for the VM to use (in addition to that required by your host)
- At least 25 GB of free disk space

[1] If your computer has a 64-bit capable CPU and you receive an error message when you try to run the virtual machine that reads: *This kernel requires an x86-64 CPU, but only detected an i686 CPU, the BIOS setting for virtualization is most likely not enabled on your computer*, you must enable virtualization in the BIOS setting to continue. Perform a Google search to find specific instructions for your computer.

## Operating Systems (64-bit only)

- Microsoft Windows: 7, 8, 10
- Apple OSX macOS

## Virtualization software

- Microsoft Windows: VirtualBox or VMware Workstation Player
- OS X or macOS: VirtualBox or VMware Fusion

# Installing virtualization software

Virtualization software is used to emulate a complete computer system, allowing a guest operating system to run on a host operating system.

Install the virtualization software of your choice. You can accept the default installation options or customize the installation according to your preferences.

Pega VM's have been tested and work with the following virtualization software:

- **Virtual Box** ( https://www.virtualbox.org/ )

  VirtualBox is available as Open Source Software under the terms of the GNU General Public License (GPL) version 2.

- **VMWare** ( https://my.vmware.com/en/web/vmware/downloads )
  - Workstation Player (Windows only). Paid license required.
  - Fusion (OS X and macOS only). Paid license required.

There are other virtualization tools you may use as well. As Pega saves its VM images as OVA files, any software that supports the latest OVA standards should be OK to use.

After installing the virtualization software of your choice, proceed to the appropriate section in this document to learn how to import and run it.

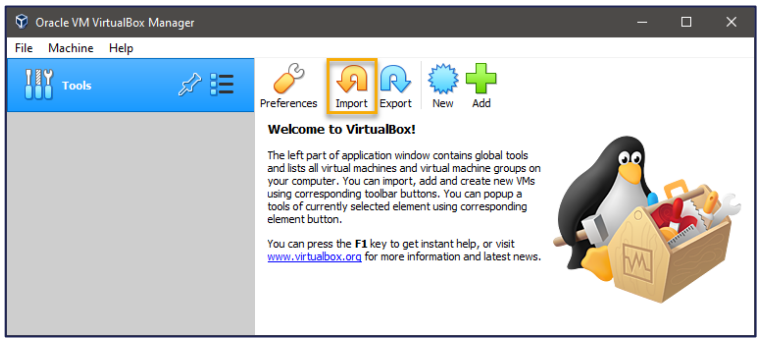
# Running your Virtual Machine

## Virtual Box

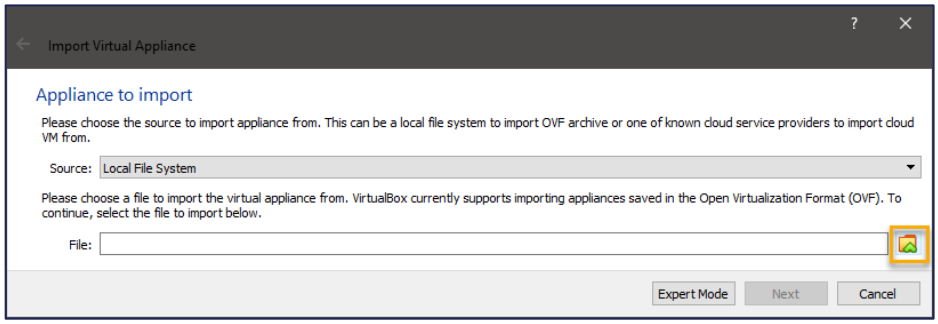
Follow these steps to run the VM using VirtualBox.

### Importing the VM

1. Launch VirtualBox
2. Click the **Import** icon



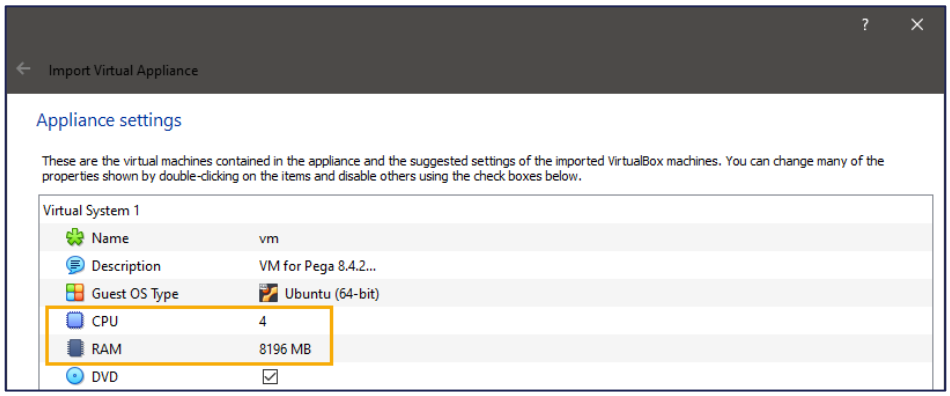

3. Click the **Folder** icon to select the OVA you wish to import.



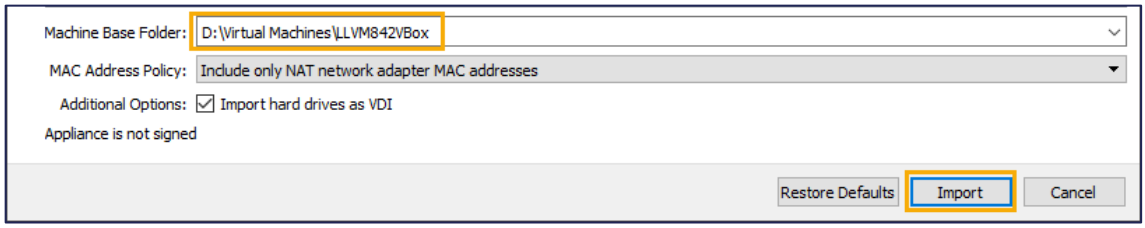

4. Select the OVA you want to import into VirtualBox, and then click **Open**.
5. Click **Next**.
6. In the Appliance settings window, you can modify the CPU and RAM. You can configure the maximum number of CPU your computer can support, and set the RAM to a minimum value of 8192 MB.

The optimum student experience has been reported for the 8.5.1 and 8.5.2 images when the settings are at 2 CPU and 16 GB RAM.

7. After modifying, the settings should look like this:



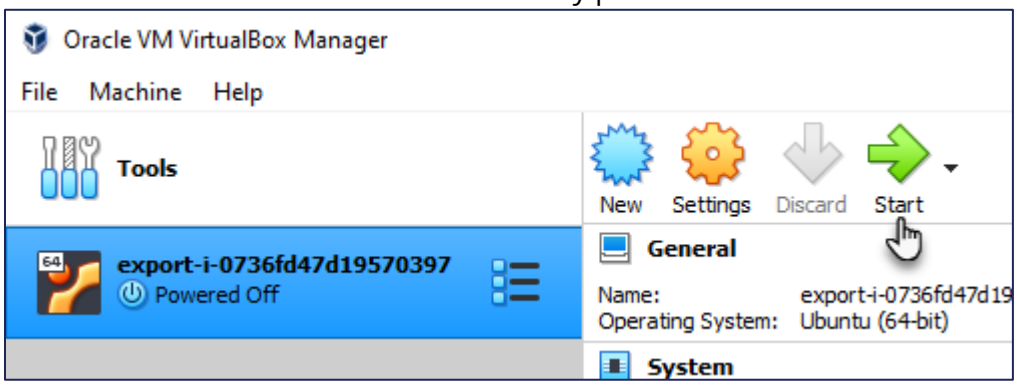

8. Choose an appropriate place on your system to store the files in (make sure there is adequate space and choose a solid-state (SSD) drive if available as this will dramatically improve performance).




9. Click **Import** to import the OVA.

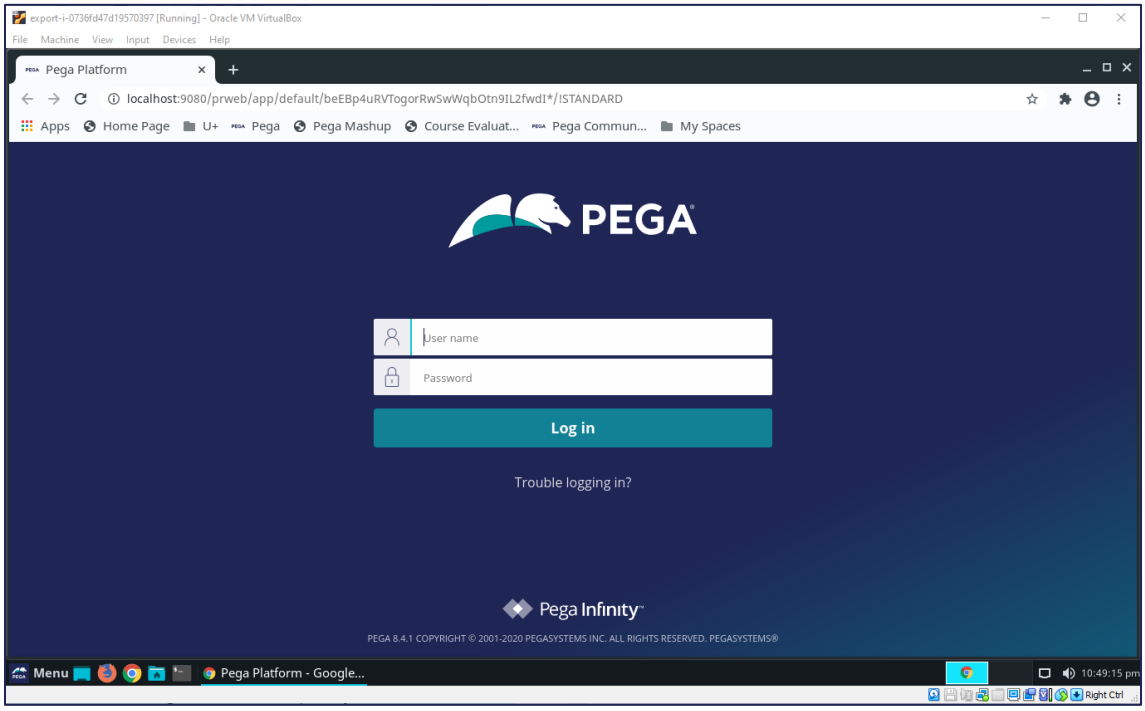
## Starting the VM

1. Make sure the VM is selected in the Library panel and click the **Start** icon.



2. The VM opens the VM desktop in a new application window.


3. ***Wait a few minutes***, then click on the browser icon to open the Pega log in page.

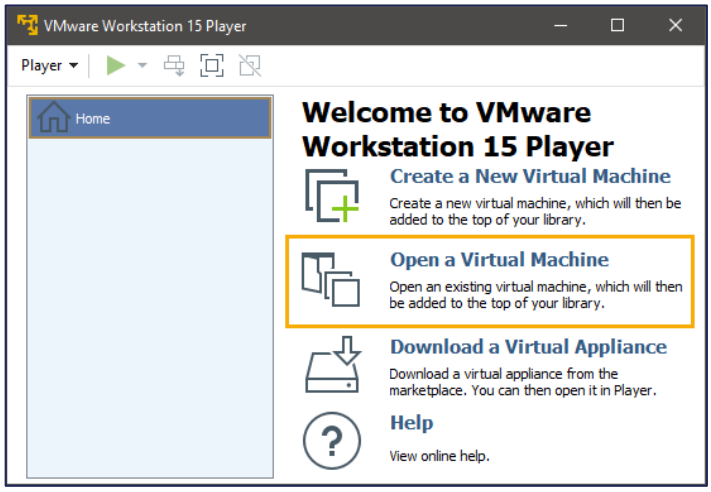


# VMware Workstation Player

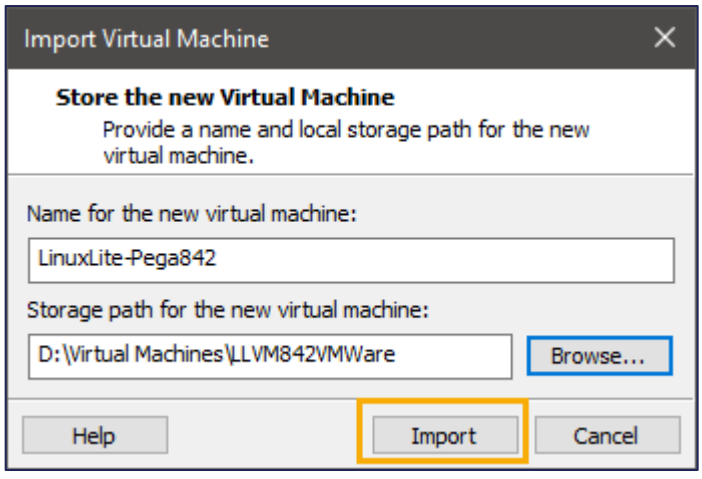
Follow these steps to run the VM using VMware Workstation Player.

## Importing the VM

1. Launch VMWare Workstation Player
2. Click **Open a Virtual Machine**




3. In file explorer, select the ova file you wish to use and click **Open**.
4. Enter a name for the VM and choose an appropriate place on your system to store the files in (make sure there is adequate space and choose a solid-state (SSD) drive if available as this will dramatically improve performance).

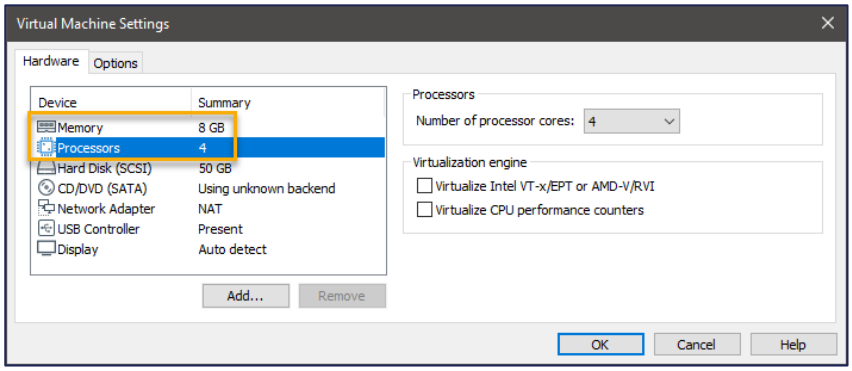



5. Click **Next**.

6. Click **Edit virtual machine settings** to modify CPU and network settings if desired. It is recommended to set at least 2 CPU and 12 GB RAM.

The optimum student experience has been reported for the 8.5.1 and 8.5.2 images when the settings are at 2 CPU and 16 GB RAM.

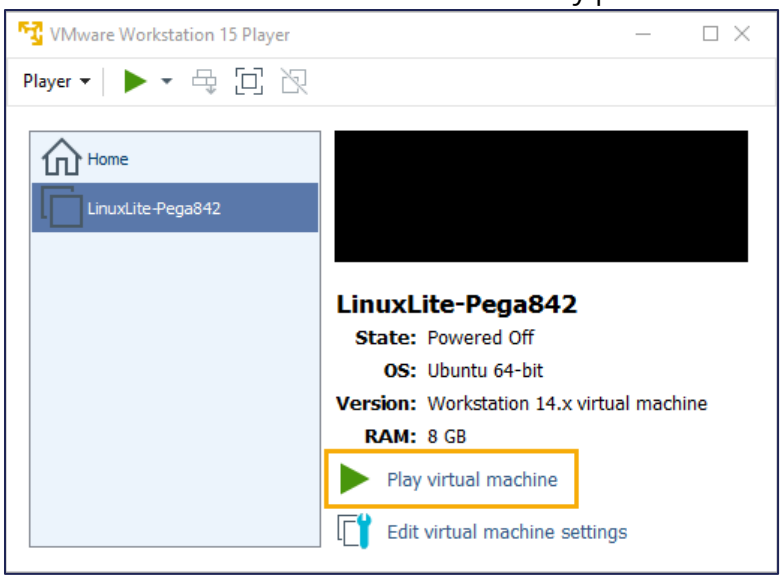
7. After modifying, the settings should look like this:



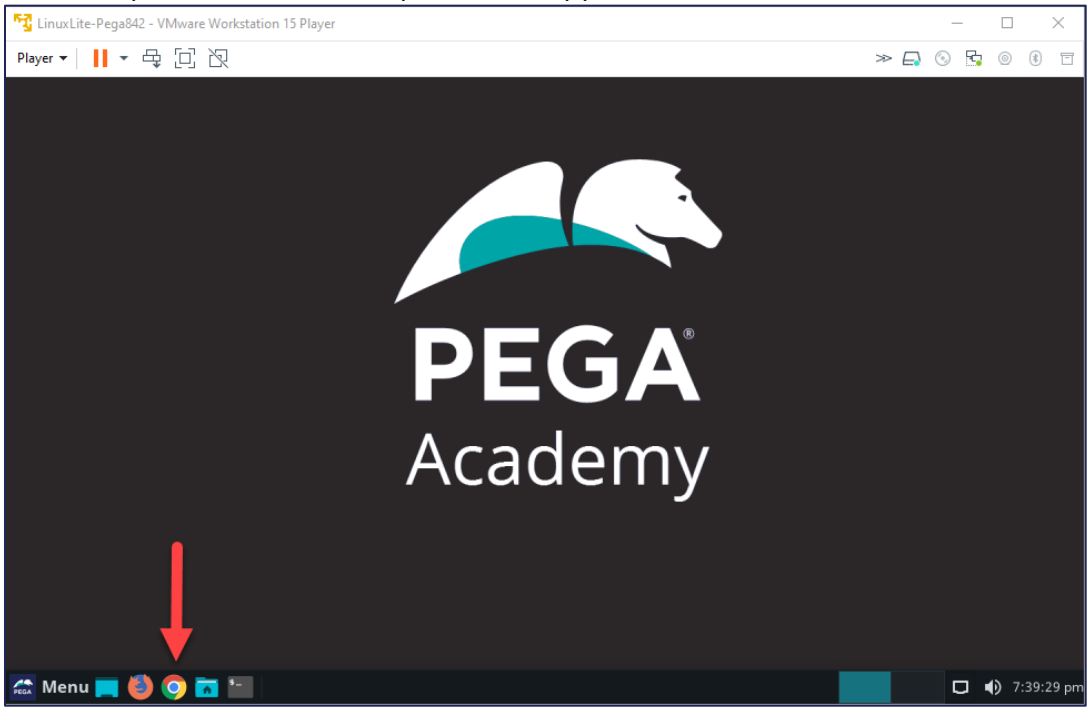

Click **OK** to confirm your settings.

## Starting the VM

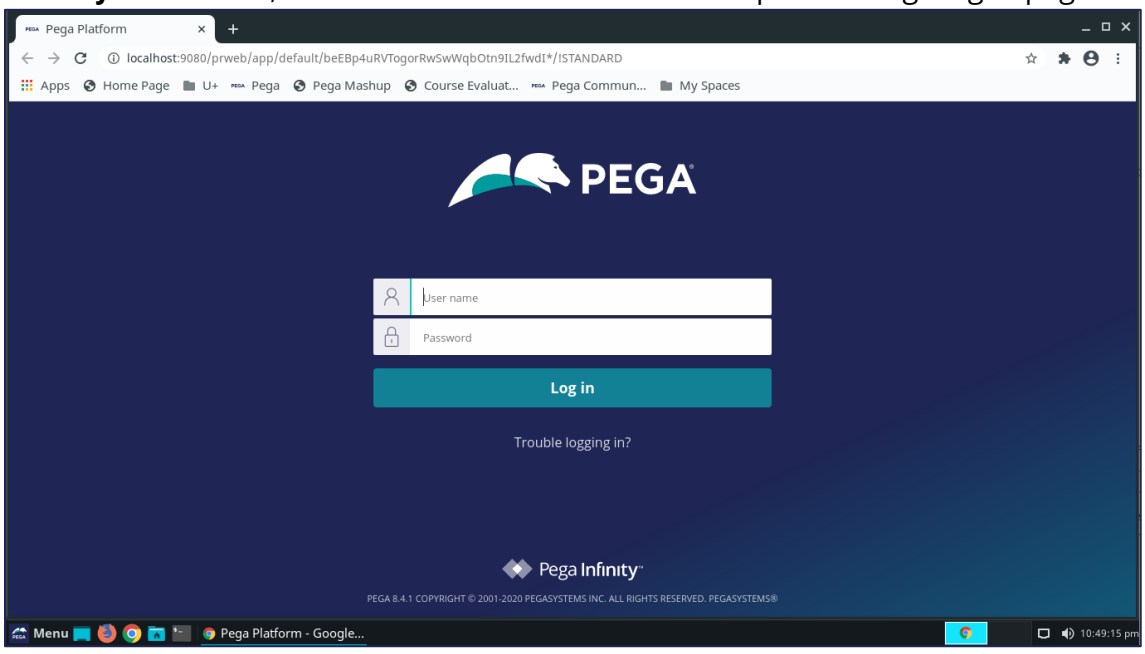
1. Make sure the VM is selected in the Library panel and click the **Play virtual machine** link.



2. The VM opens the VM desktop in a new application window.



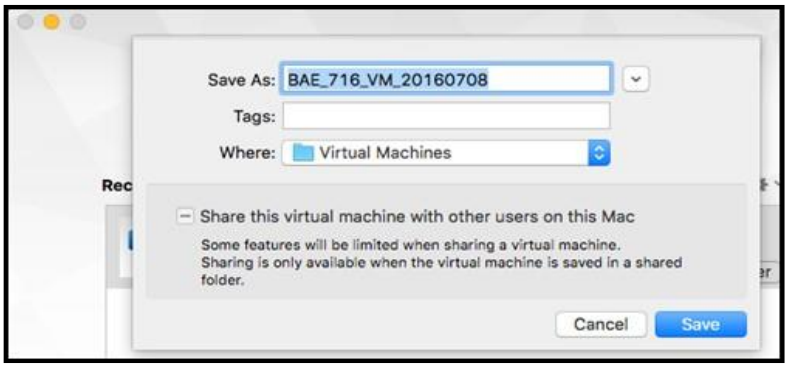

3. ***Wait a few minutes***, then click on the browser icon to open the Pega log in page.



## VMware Fusion

Follow these steps to run the VM using VMware Fusion.

1. Launch VMware Fusion.
2. From the menu bar, click **File** > **Import**.
3. Click **Choose File** to browse to the OVA you downloaded.
4. Select the OVA file and click **Open**.
5. Click **Continue**.
6. Change the name of the VM if desired and click **Save**.



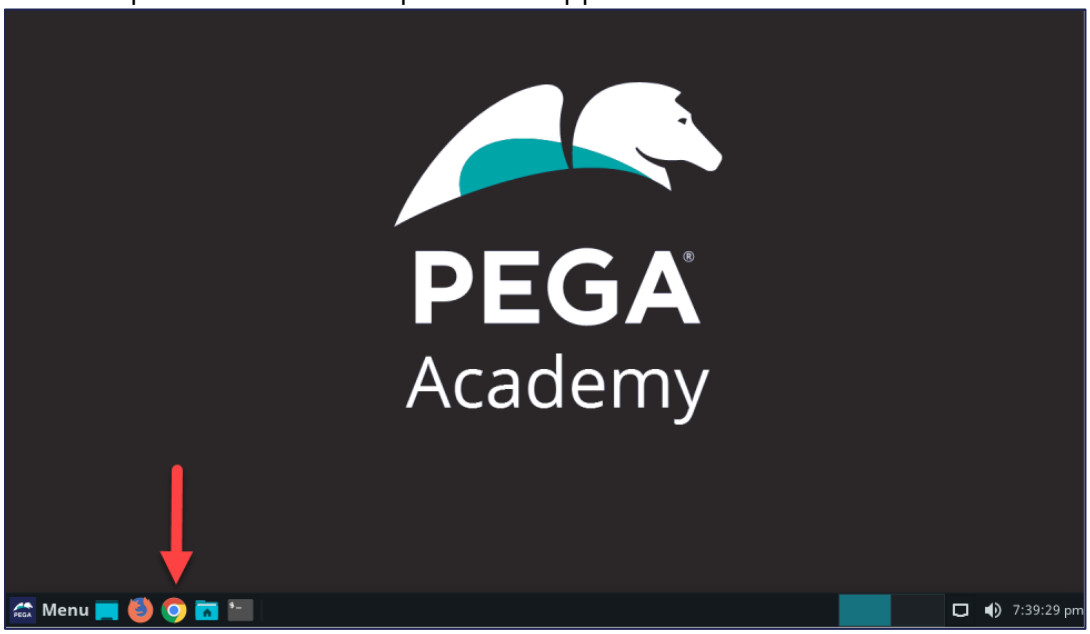

7. If an "OVF specification conformance" message displays, click **Retry**.


8. Click **Finish.**

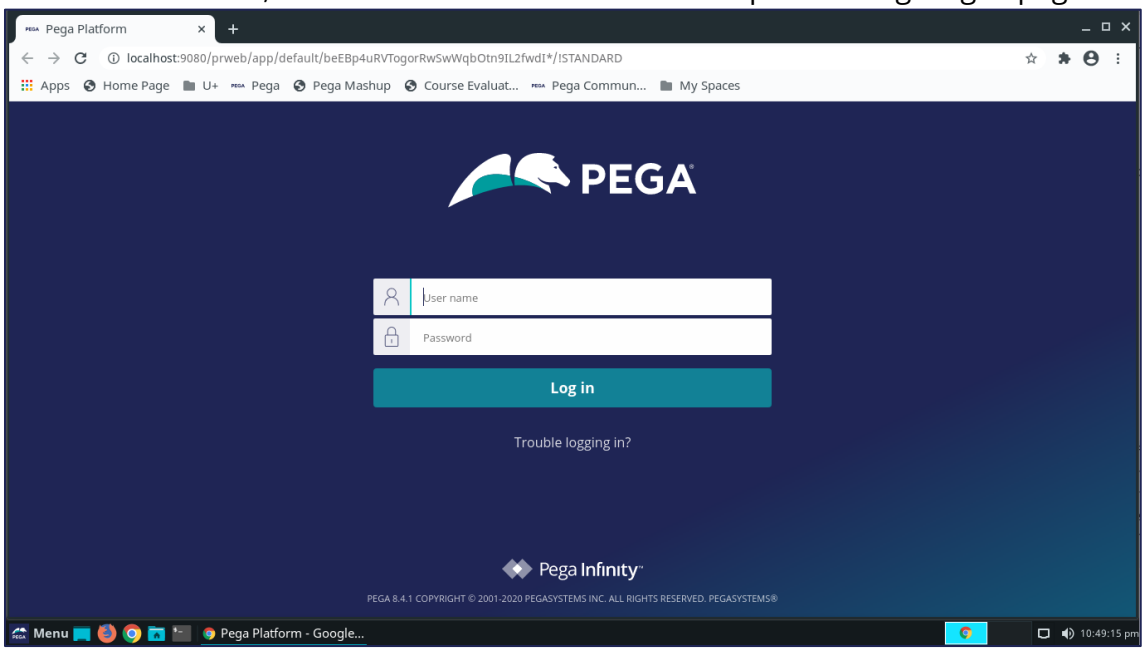
## Starting the VM

1. Make sure the VM is selected and click the **Run** button.

2. The VM opens the VM desktop in a new application window.




3. Wait a few minutes, then click on the browser icon to open the Pega log in page.



# Linux Lite Applications

Starting your browser and logging on to Pega is just the beginning with the Pega classroom virtual machine.

You will notice that the browser is pre-configured to open Pega when you start it, using the http://localhost:9080/prweb URL.

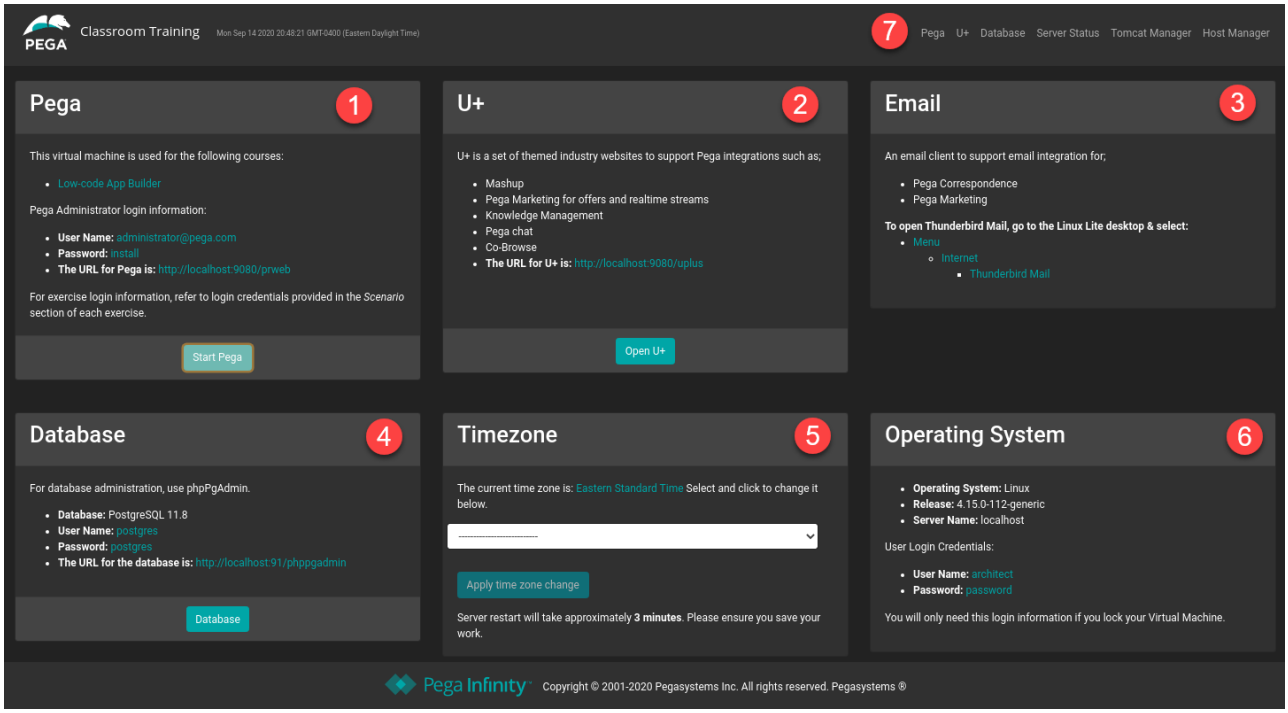
## Bookmarks

The bookmarks toolbar also has links to other handy pages, which are explained below.

| Bookmark | Description |
|---|---|
| **Home Page** | A landing page with tiles and menus to allow you to explore and extend your course knowledge, as well as access VM settings and applications (see below). |
| **Pega (default)** | The Pega Application. Login using course credentials to complete exercises. |
| **U+** | A suite of tailored sample industry websites to support Pega web integration exercises with an easy to configure, low-code interface. |
| **Pega Mashup** | A legacy sample website to support Pega web mashup exercises for those with HTML coding skills. |
| **Course Evaluation** | Access to our course evaluation system. |

## Home Page

The home page provides easy access to applications from a convenient landing page, with links, buttons, and useful information all at a glance.




1. The **Pega** application with useful login and course information.
2. The **U+** suite of industry websites
3. A built-in **Thunderbird** email client, which has been specially modified so that any emails sent from the Pega application will be redirected to its inbox, regardless of the recipient's email address. Ideal for testing email features! This application must be opened from the VM desktop menu, as described.
4. **Database** access is provided for those who want to explore or set up additional database assets for extended practice with data sourcing, integration, etc.
5. **Timezone** allows you to change the VM timezone to your local one. This is a persistent setting and note, and it requires a restart of the VM.
6. The **operating system** tile provides the Linux Lite details and user credentials.
7. **Links** for convenience are also provided in the home page title bar.

# Shutting Down the VM

Pega Academy recommends shutting down the VM when you are finished using it. Follow the procedures for your player.

## VirtualBox

1. Log out of Pega.
2. From the VirtualBox Manager, right-click on the virtual machine you want to shut down and select **Close** > **ACPI Shutdown**.

   Alternatively, from the **Machine** menu item, select **ACPI Shutdown**.
3. Click the **ACPI Shutdown** button to confirm the shutdown request.

## VMware Workstation Player

1. Log out of Pega.
2. From the VM window, click **Player** > **Power** > **Shutdown guest**.
3. Click **Yes** to confirm you want to shut down the VM.

**Note:** VMware Workstation Player does not support the ACPI (Advanced Configuration and Power Interface) specification on a guest virtual machine. You may hear that powering off the VM corrupts the virtual machine, but this is not the case. If you have logged out of Pega, there are no I/O (Input/Output) operations running, so there is no risk of corrupting the VM. If you have logged out of Pega, you can safely use the Shutdown guest option in VMware Workstation Player.

## VMware Fusion

1. Log out of Pega.
2. From the menu bar, select **Virtual Machine** > **Shut Down**.
3. Click the **Shut Down** button to confirm the shutdown request.

# Network Settings

The Pega VM is configured by default to use a **NAT** adapter for network access. When using NAT networking, the VM shares the host machine's network address. This gives the VM access to external network resources, including your computer (the host). This setting is effective in the majority of cases; however, if you experience problems, often this might be when using VirtualBox in a corporate network, try changing the setting to Host-only. This limits access to the host PC only and may resolve any issues.

Another popular setting is to select **bridged** networking. In this mode, the VM is a full participant in the network and will be assigned its own unique network address just like a real machine. This gives the VM access to other machines on the network, including your computer (the host). The VM can be contacted by other machines on the network as if the VM were a physical computer on the network. You can use this setting to run your VM on one PC and access it from another, just as you would if it were running on a server.

Because network adapters vary from computer to computer, an optional final step in setting up the Pega Academy VM is to confirm the correct network adapter for your computer is selected. After the import of the OVA is complete, follow these steps to confirm the network adapter setting.

Refer to your VM player's help for how to change the network connection type. They are all similar, and you can access a settings menu to find network settings.

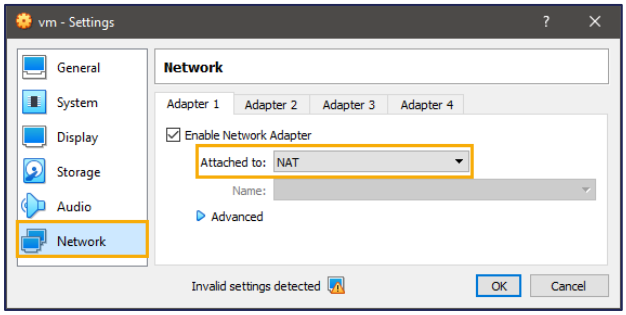



*Figure 1: VBox*

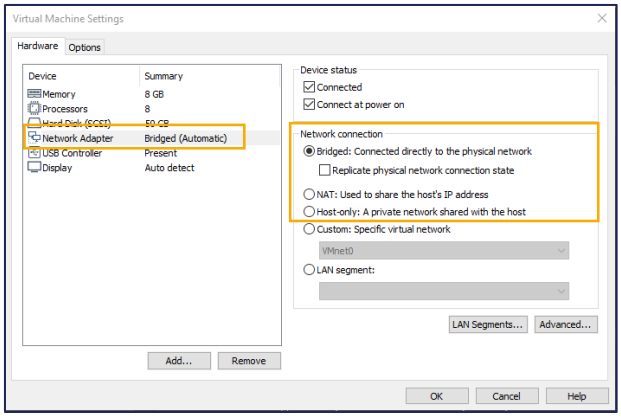
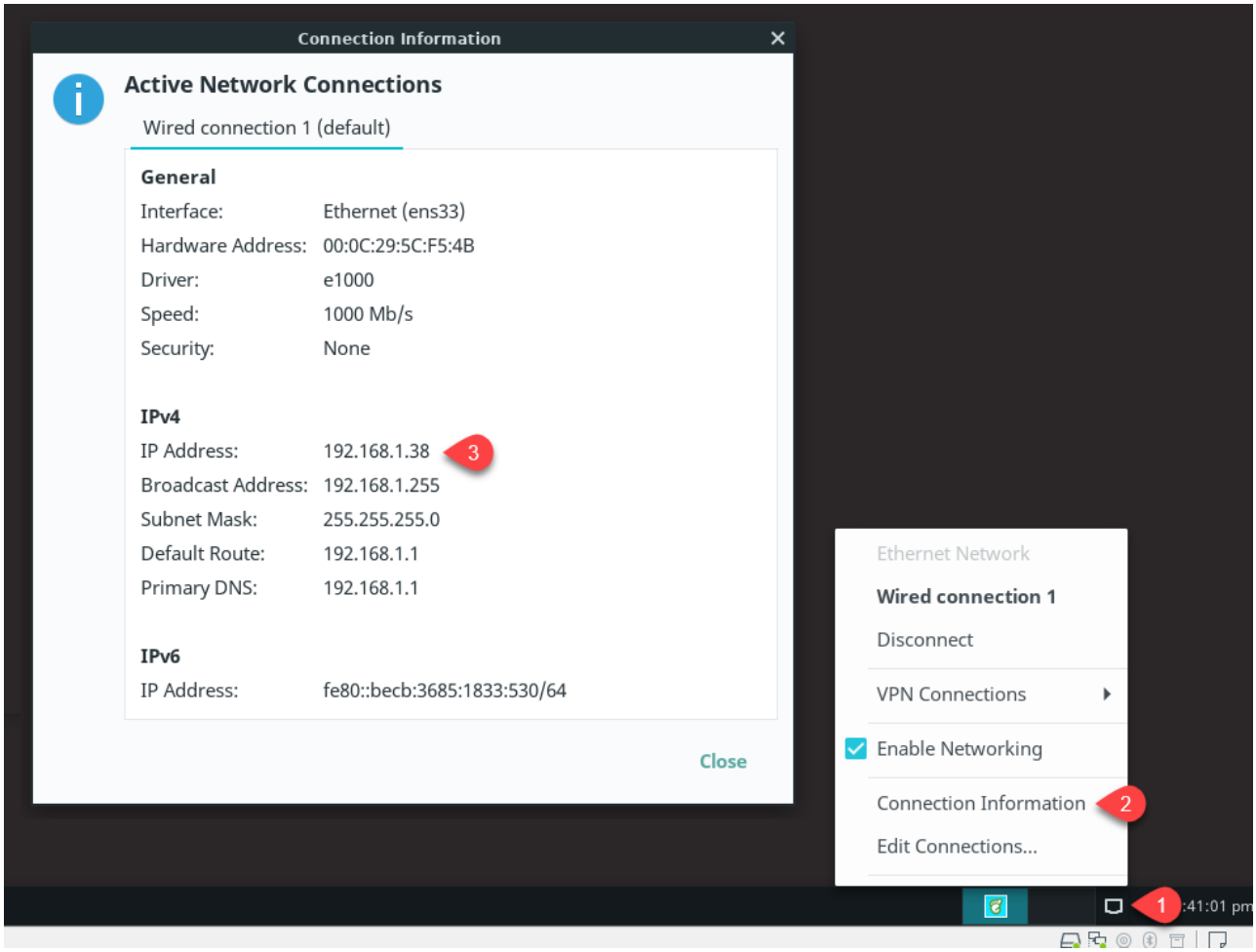



*Figure 2: VMWare*

If you choose bridged and wish to find out what IP address your VM is using, it can be found in the VM as shown below:




Changing the network mode should not require any further action as the VM will reconnect automatically. However, if for any reason it does not, you can manually disconnect and reconnect it using the menu as seen above.

**Note:** The IP address shown in the image above is an example only. The IP address displayed in your system will most likely be different and is the one you should use.

# Getting Help

Each virtual machine player's features vary, but generally, they perform similar functions, and there is a wealth of readily available help on the vendor's websites, forums, and internet in general. As the saying goes, 'if in doubt, Google it.' Below are some useful links.

## VBox

https://www.virtualbox.org/manual/

## VMWare Player

https://www.vmware.com/support/pubs/player_pubs.html

## VMWare Fusion

https://www.vmware.com/au/support/fusion.html

Please refer to the vendor help and support for the respective players. For assistance with the Pega classroom content, i.e., course and the Pega applications inside the VM, contact your course instructor or education@pega.com.