

Tutorial – Operating Systems: Creating a Web Server

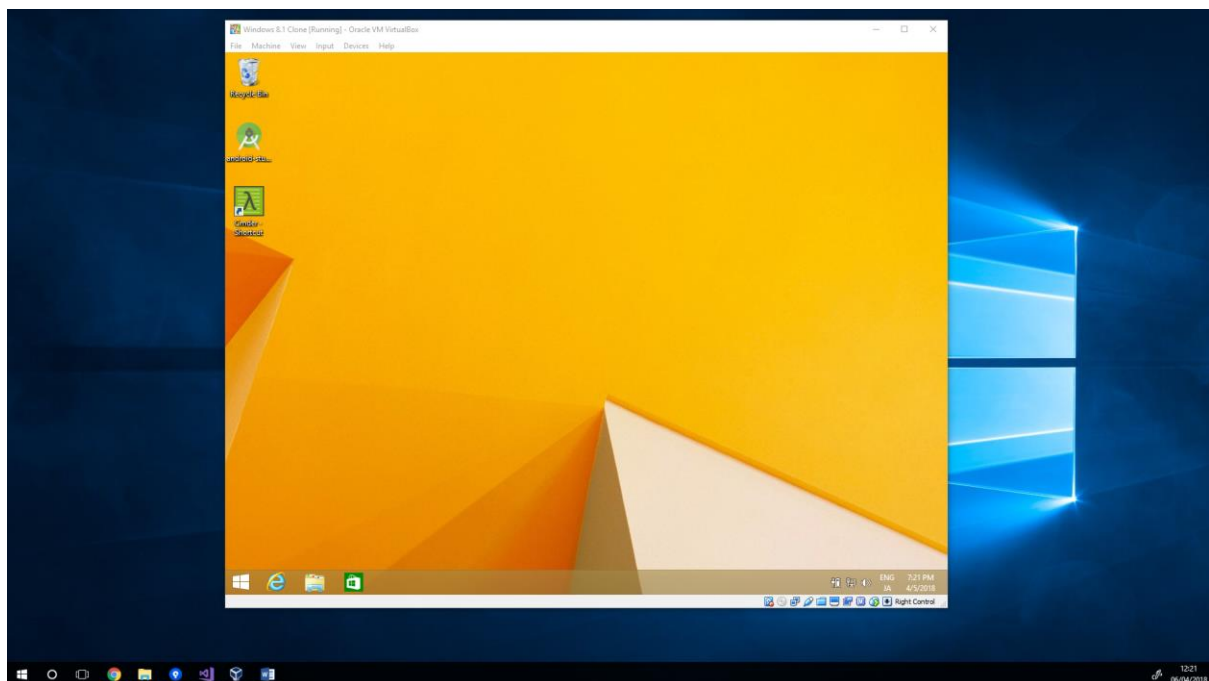
Later in this course we will discuss how to create web pages. When creating web pages, it is useful for us to create a development server on which to host our pages. This allows us to view the web pages through a web browser and have the pages function exactly as if they were hosted on a live web server.

In this tutorial we will use the Virtual Box software to create a Virtual Machine – a linux server that runs on our Windows machine. We'll set up this linux server to host web pages so that we can use it to build our web site later in the course.

Download Virtual Box:

VirtualBox is a general-purpose full virtualizer for x86 hardware, targeted at server, desktop and embedded use. It is a program we can install on our Windows machine that will let us install and run other operating systems.

This is an image of Windows 8 running within a Virtual Box window on Windows 10.



Go to the Virtual Box website and download the latest version of the software.

<https://www.virtualbox.org/wiki/VirtualBox>

If you are an on-campus student your teacher will advise you on whether or not this download is available on the local student drive.

If you need to download the software from the Virtual Box site, select the correct host for your computer. For example, if you use Windows, select the Windows host:



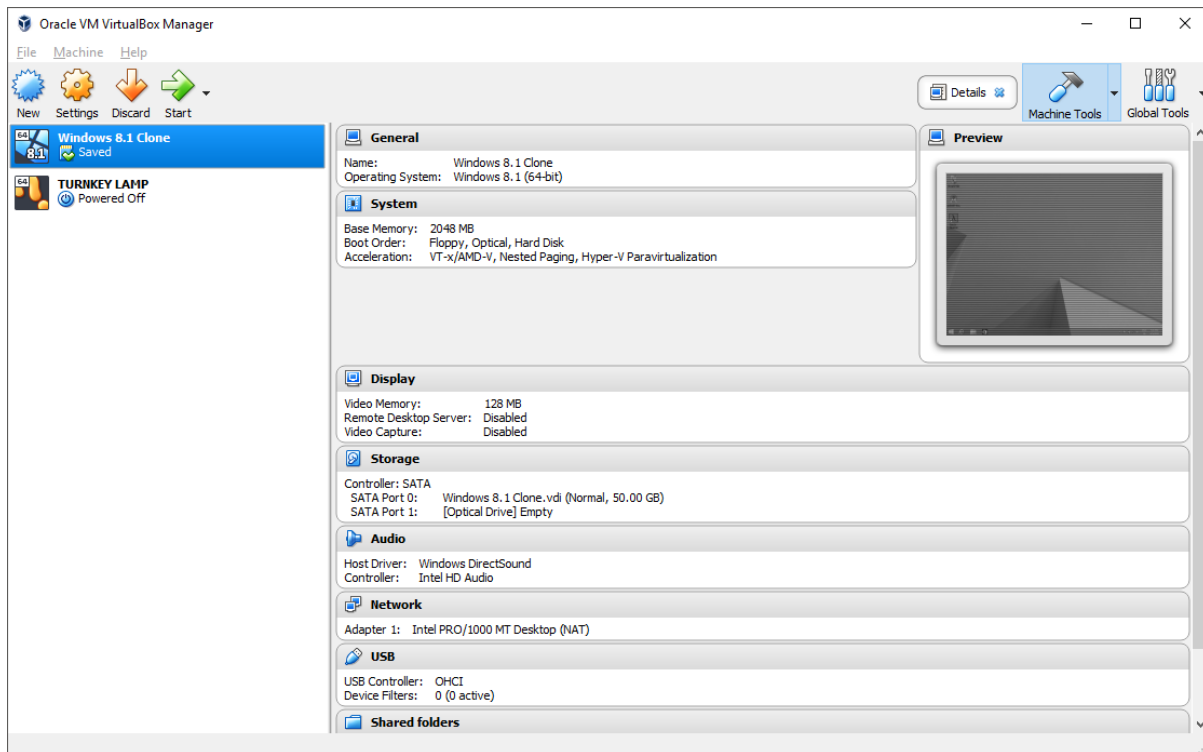
The screenshot shows the VirtualBox website. On the left is a sidebar with links: About, Screenshots, Downloads, Documentation (with sub-links for End-user docs and Technical docs), Contribute, and Community. The main content area has a large 'VirtualBox' header, followed by a 'Download VirtualBox' section. Below this, it says 'Here you will find links to VirtualBox binaries and its source code.' and 'VirtualBox binaries'. A paragraph states: 'By downloading, you agree to the terms and conditions of the respective license. If you're looking for the latest VirtualBox 5.1 packages, see [VirtualBox 5.1 builds](#). Consider upgrading.' Under the heading 'VirtualBox 5.2.8 platform packages', there is a list of links: Windows hosts (highlighted with a mouse cursor), OS X hosts, Linux distributions, and Solaris hosts. At the bottom, it says 'The binaries are released under the terms of the GPL version 2.'

Install Virtual Box by running the downloaded executable installer and selecting the default options:



When the installation process has completed, the Virtual Box program will start.

You should see a screen similar to the following (without any installed operating systems):



Installing a Web Server:

For our web server we are going to use an operating system called Linux. Specifically a specialized version of Linux called Turnkey Linux.

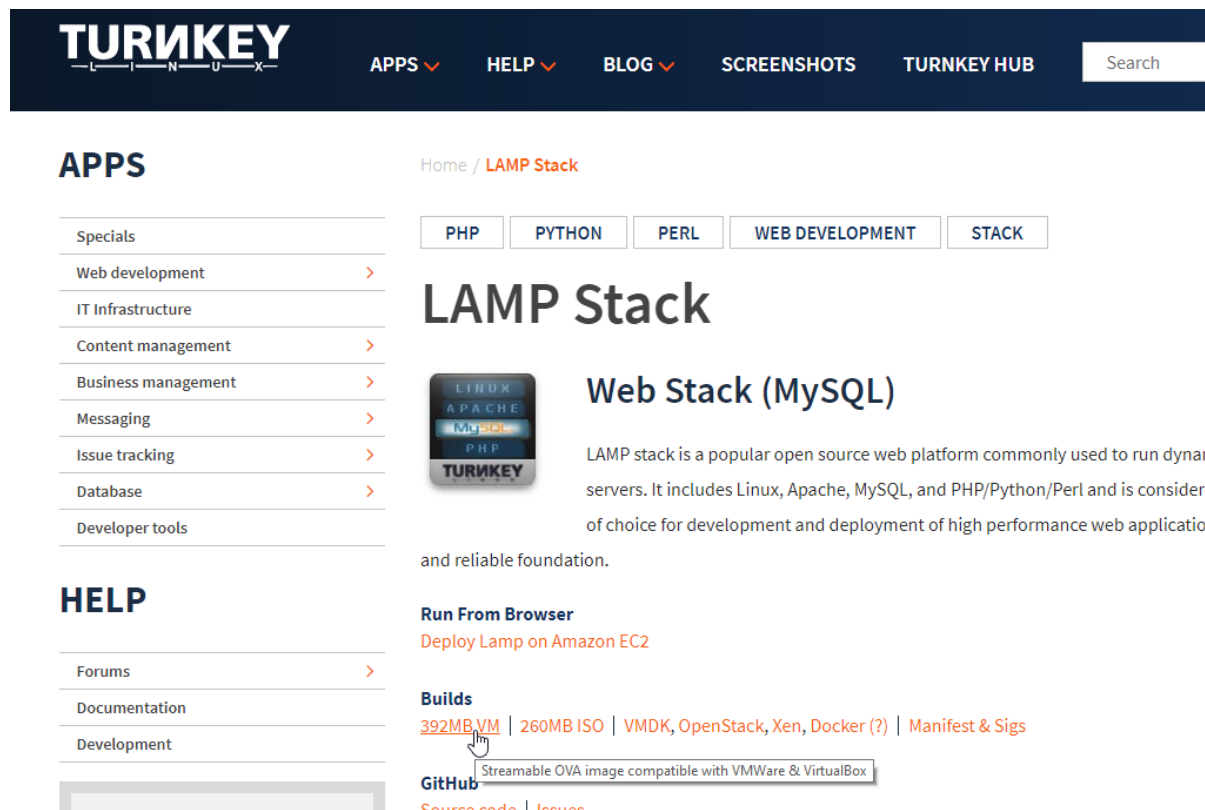
Turnkey is based on Debian Linux, and comes packaged with all the software we will need to run a web server.

We will be downloading and installing the Turnkey LAMP stack. LAMP is an acronym meaning Linux, Apache, MySql and Php. Linux is the Operating System, Apache is the web server software, MySql is a database server and Php is a popular web scripting language used to make web pages. This combination of software is a very common configuration for web servers.

The Turnkey LAMP stack also comes packaged as a VirtualBox virtual machine, which will simplify the setup procedure for us.

Go to the Turnkey LAMP Stack website and download the virtual machine (VM) version:

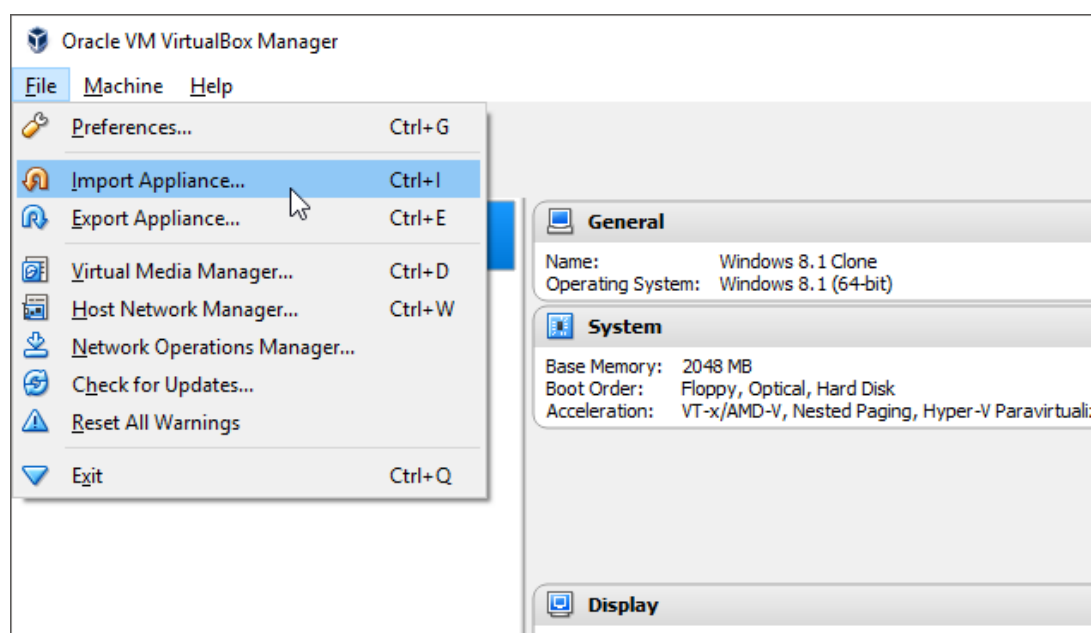
<https://www.turnkeylinux.org/lampstack>



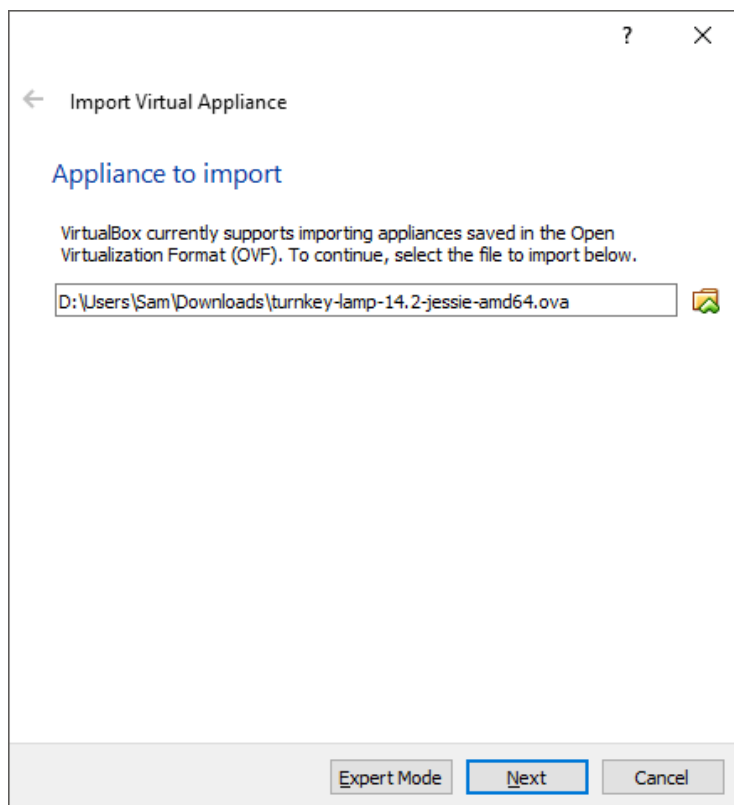
The download is around 400MB. If you are an on-campus student your teacher will advise you on whether or not this download is available on the local student drive.

To install the Turnkey LAMP Stack, open Virtual Box.

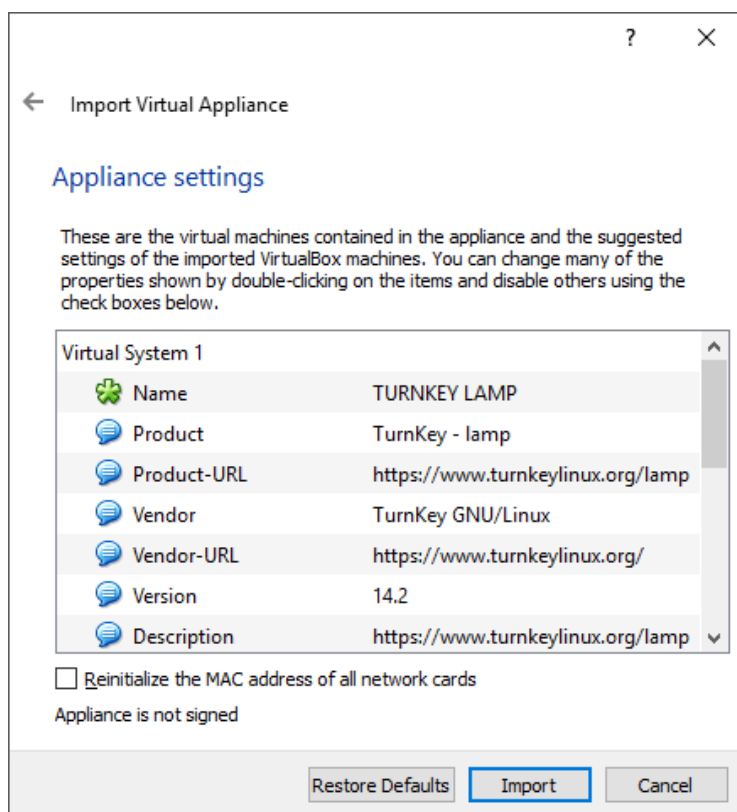
From the *File* menu, select *Import Appliance*:



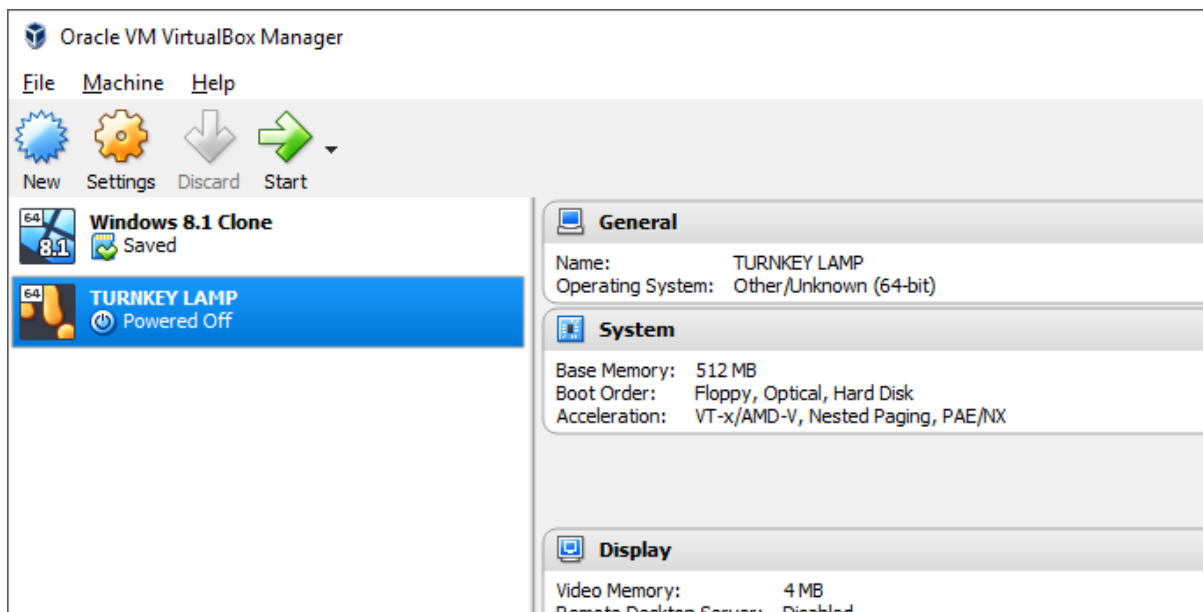
Click the browse button and locate the *turnkey-lamp-14.2-jessie-amd64.ova* file, then press the *Next* button:



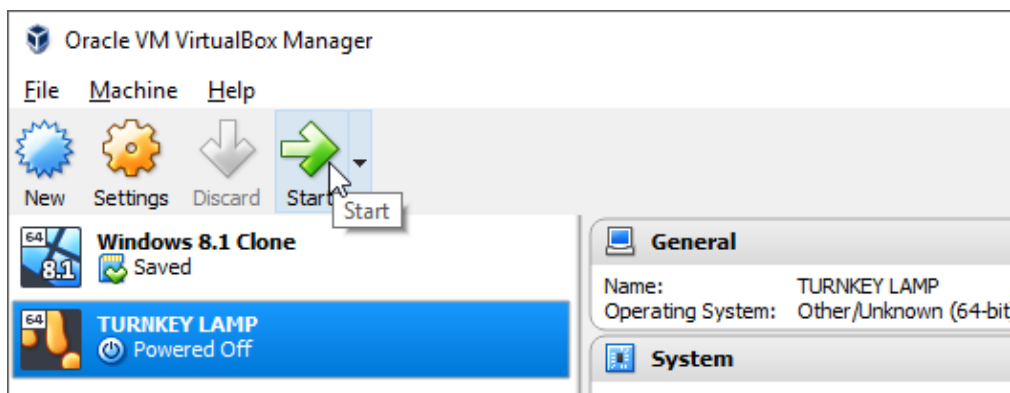
On the next screen press the *Import* button. We do not need to modify any options.



The Turnkey Lamp system should now appear in your list of installed virtual machines:



Select the Turnkey Lamp system, and press the *Start* button.



This will boot up the Turnkey virtual machine.

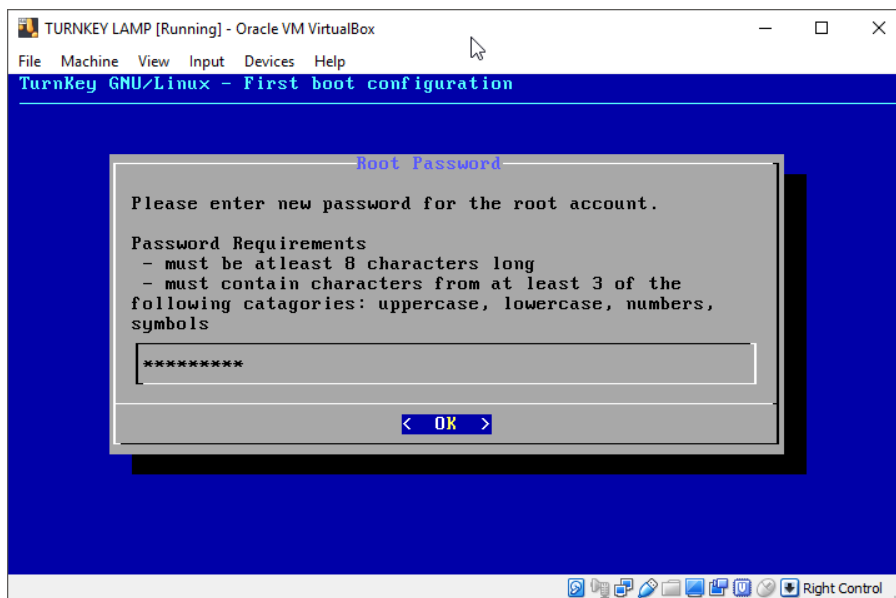
Configuring the Web Server:

The first time we start the server we will need to set up the system. This mostly involves setting the passwords for the root account and for the database server.

After pressing the *Start* button, a window containing the Linux server will appear. The system will run for about thirty seconds as it initializes, and then it will display the prompt for you to enter the new system passwords.

To ensure we never forget the system passwords, we will use the password **Admin1234** for all passwords. (We don't really need to worry about security too much, since we are running in a virtual machine. For a real web server we'd want to choose a much better password).

When prompted for the *root* account password, enter **Admin1234**

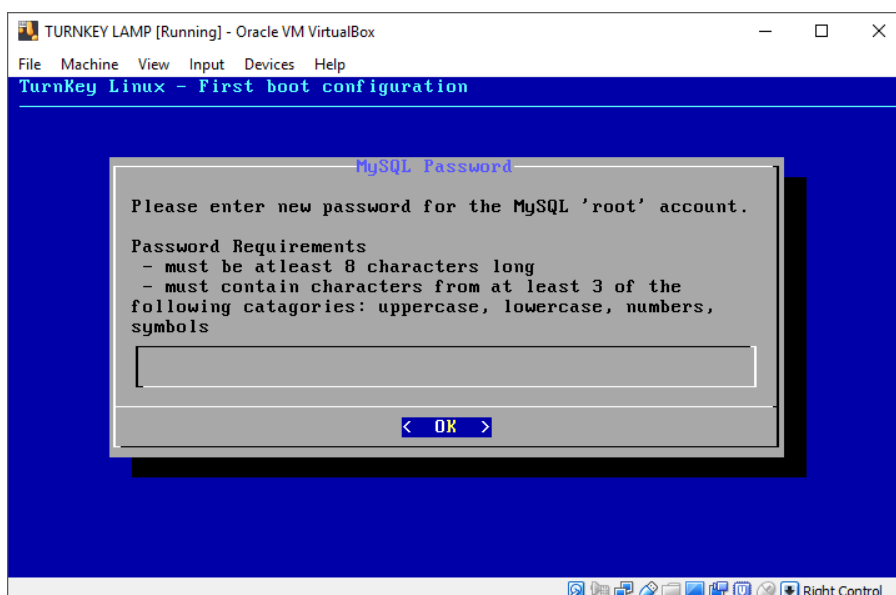


You won't have any mouse control within the Linux system. So, after you have entered the password, press the *Tab* button on the keyboard to move the cursor to the *OK* button, and press *Enter*.

At the prompt to re-enter the password, type **Admin1234** again, and press *Enter*.

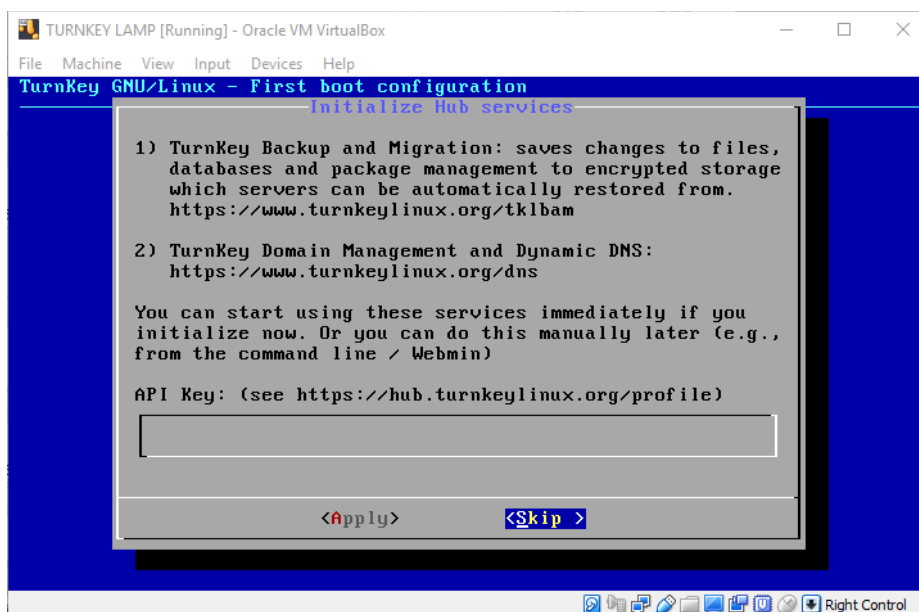
The next screen requests the password for the MySQL Database server. Again, enter the password **Admin1234**.

You may have noticed that as soon as you click on the Virtual Machine window, you loose control of your mouse. Press **Right Control** to get control of the mouse back. Admi



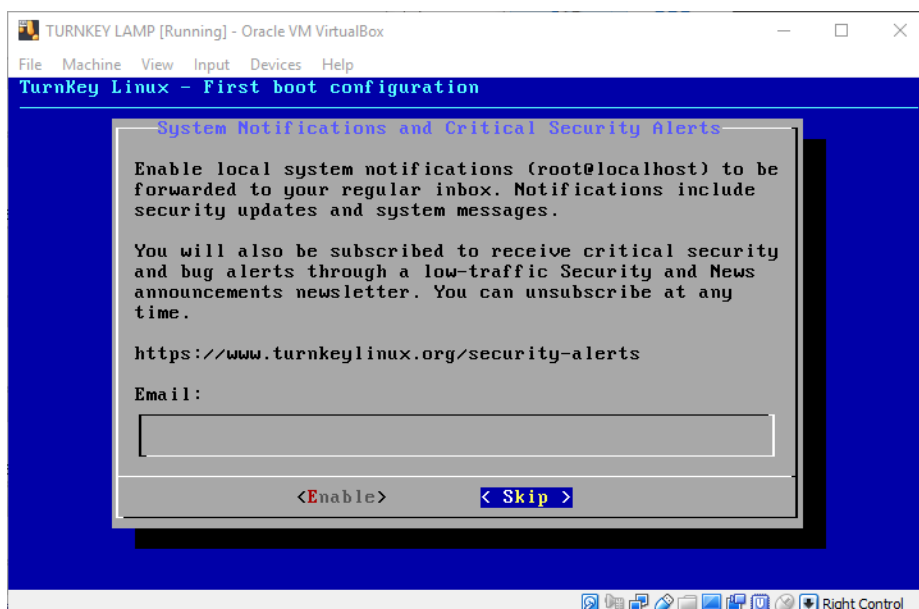
The next screen is asking if you would like to make online backups of your configuration settings. We can skip this.

Press the *Tab* key to move the cursor to the *Skip* button and press *Enter*



The next screen asks for an email address to send system notifications to.

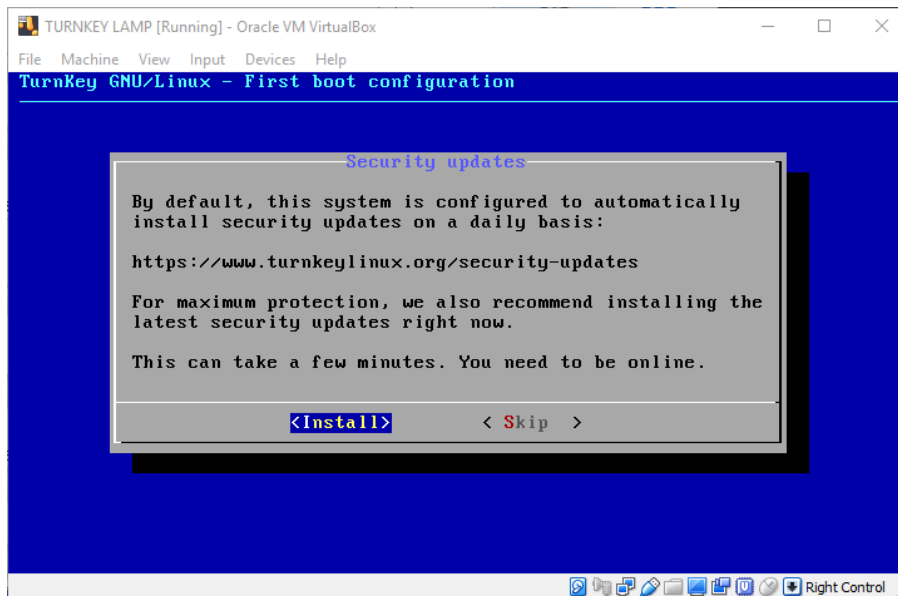
Again, press *Tab* to highlight the *Skip* button, then press *Enter*.



The last setup screen asks us if we would like to enable automatic updates.

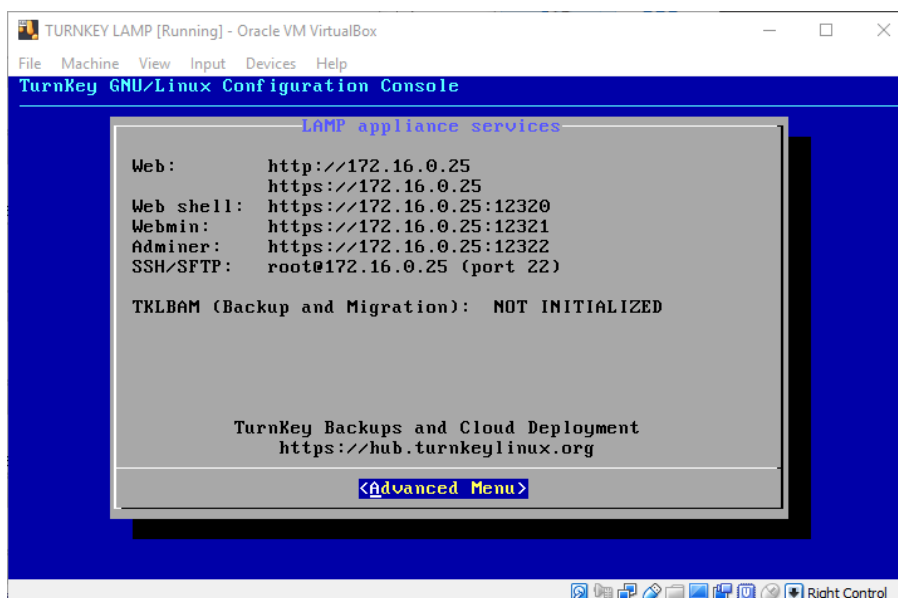
As this is only a virtual machine installation, we can skip this setup too.

Press *Tab* to highlight the *Skip* button, and press *Enter*.



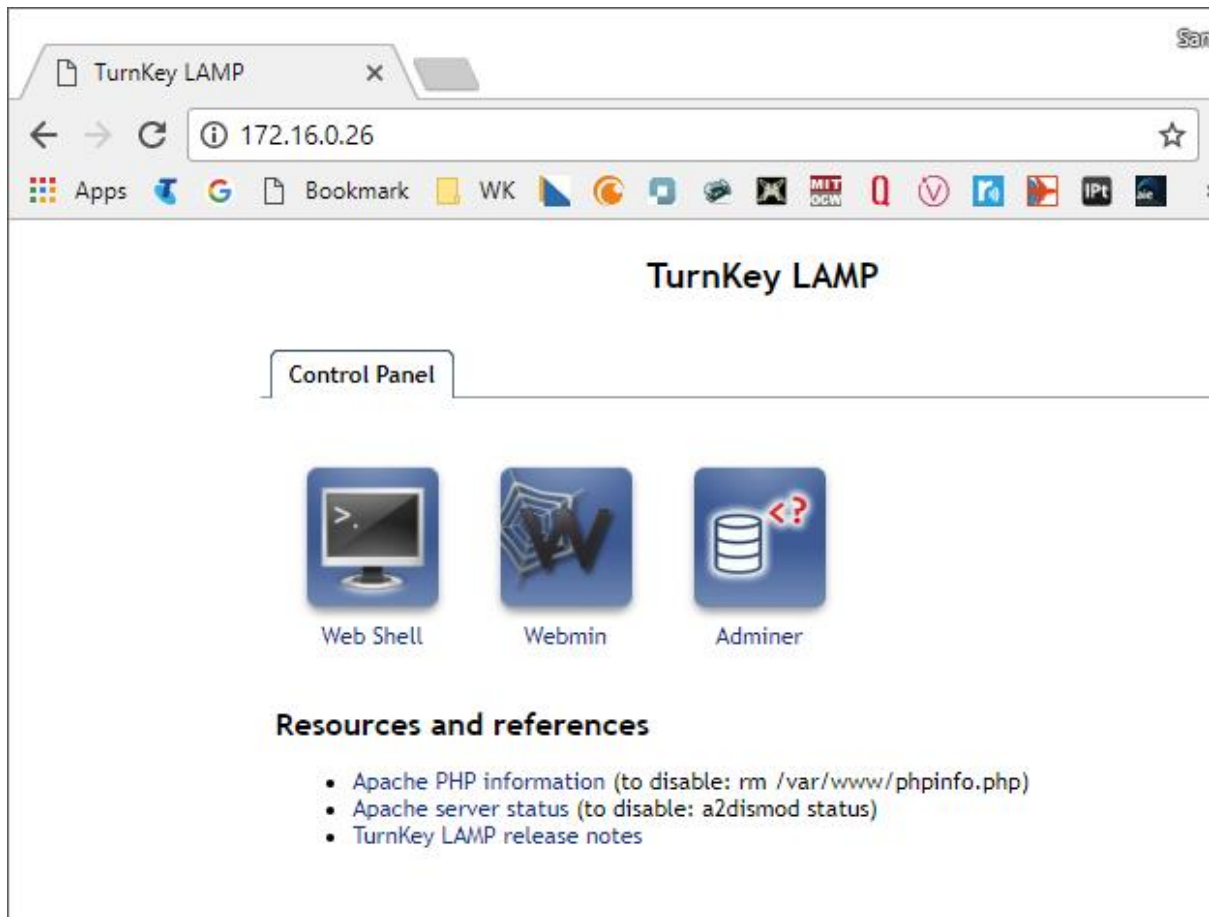
The installation is now complete. The final screen should list a series of web addresses. These web addresses will allow us to access our web server from our internet browser (running on our Windows machine).

Take note of the *Web* address. In the image below, this address is <http://172.16.0.25>



Open your web browser and enter this address in the address bar.

You should see the Turnkey LAMP default web page appear:

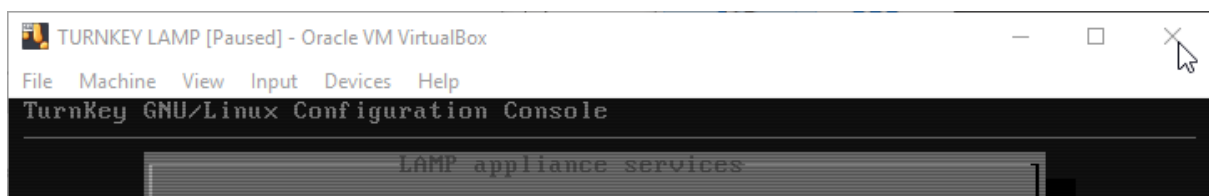


This is the end of this tutorial.

Take a screenshot of Turnkey Linux running inside Virtual Box, and a screenshot of your web browser accessing the Turnkey LAMP web page.

Submit both screenshots for your assessment.

To shutdown your virtual machine, click the window's close button:



From the popup window, select *Power off the machine*:

