

## Introduction to VMware

**Purpose:** CyberPatriot competitions and training materials make extensive use of VMware, a virtualization product that allows you to “run a computer within your computer”. This lesson will provide you with an introduction to VMware Player – a free product that will allow you to run virtual images on your computer.

NOTE: These instructions apply only to computers running a Windows operating system such as Vista, Windows 7, Windows XP, etc. If you are using a Linux-based system you will need a different version of the VMware software. If you are using a Macintosh you will need additional software, such as Fusion, as there is no VMware Player software available for Macintosh systems. These instructions also assume there are no VMware products already installed on the system you are using.

### **Obtaining the VMware Player Software**

The VMware Player software package is made available for free from VMware, a company that produces a variety of virtualization products. To obtain a copy of the VMware player software, follow these steps:

1. Open a web browser and type [www.VMware.com/products/player](http://www.VMware.com/products/player) into the location bar.
2. Click on the “Download” button on the VMware Player home page. This will take you to a registration page.
3. You must register for a free VMware account with a valid email address in order to download the VMware player software.
4. After you register for a free VMware account, check your email for the registration confirmation from VMware.
5. Inside your registration confirmation from VMware there is a link to download VMware products: <http://www.vmware.com/download>.
6. Click on the link or enter <http://www.vmware.com/download> into your web browser.
7. Click on “VMware Player” under the Desktop Downloads category.
8. On the next page, scroll down and look for “VMware Player” under Product Downloads. Click on “VMware Player” to go to the version selection page.
9. On the next page, scroll down and look for “VMware Player for Windows 32-bit and 64-bit”.
10. If you are not already logged into your VMware account you created in step 3, on the next page you will need to login to continue the download process. Once you have logged in you will be taken to yet another web page asking you to “Access Your Email to Activate and Access Your Free Download.”
11. Go back to the email account you used to register for your VMware account and check for a message from “The VMware Team”. Inside that message will be a link “Download VMware Player”. Click on that link to go to the VMware Player Free Product Download page.

12. Under the “Binaries” section look for “VMware Player for 32-bit and 64-bit Windows” – this should be the first entry. Click on the “Binary (.exe)” download link to the right of the description and your VMware Player installer should begin to download.
13. Once the installer has finished downloading, double-click it to begin the installation.
14. Follow the instruction prompts to install VMware Player and be sure to reboot your system when prompted at the end of the installation.

### **VMware images**

When you create or download a VMware image you may notice there are several files associated with that image. DO NOT make any changes to these files unless specifically instructed to do so. Modifying these files can severely impact the performance of your virtual image and may render it inoperable.

Some of the file types you will see associated with a VMware image are:

- \*.vmdk: Files ending in “.vmdk” are virtual disk files that VMware uses to simulate the hard drive for your virtual system. There may be one or more of these files associated with your virtual image as VMware allows you to split a single virtual disk into multiple 2GB files.
- \*.vmx: Files ending in “.vmx” are VMware configuration files. These files contain details such as the type of hardware to simulate for the virtual system, the amount of memory to allow the virtual machine to use, and so on.
- \*.nvram: This is the file that stores the state of the virtual machine's BIOS.

### **Downloading a VMware image**

You and your team will be downloading or receiving VMware images for CyberPatriot training and competitions. Any time you download a CyberPatriot image it is extremely important that you verify you have a “clean” download. You may do this by matching the checksum of the file you downloaded with the checksum displayed on the web page where you downloaded the CyberPatriot image. A checksum is a mathematical calculation based on the data contained in a file – matching checksums allows you to determine if a file has been corrupted or modified from its original state. If the checksum of the file you downloaded does not match the checksum displayed on the web page where you downloaded the file you must download the image again. While the file may seem “okay”, if the checksums do not match a variety of unexpected errors could occur.

VMware also hosts a Virtual Appliance Marketplace at <http://www.vmware.com/appliances/>. Here you can download over 1,000 pre-built VMware images containing everything from different operating systems to demonstrations of security and network management products. CyberPatriot is in no way affiliated with the Virtual Application Marketplace or any of the content made available through the marketplace. Users download and use the virtual appliances at their own risk.

### **Starting a VMware image**

After successfully installing the VMware Player software and downloading a virtual image you may attempt to start the virtual image. There are two ways to start a virtual image:

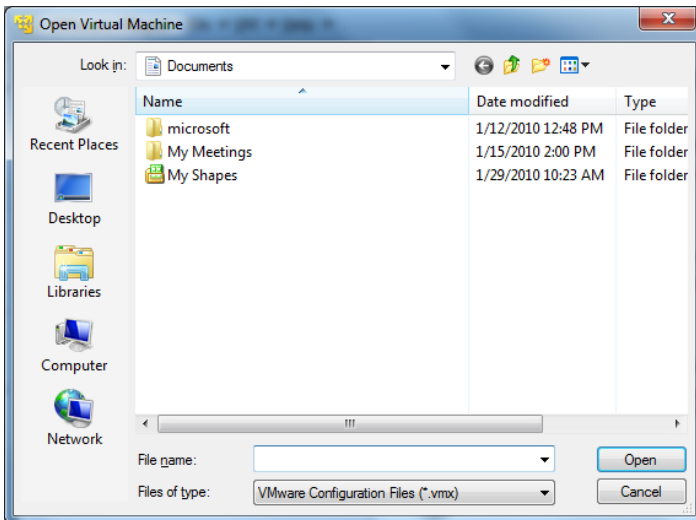
- You can double-click the “.vmx” file associated with your VMware image. This will launch VMware Player and start the virtual image.
- You can launch VMware Player from the Start Menu and browse for the virtual image you’d like to start.

To launch VMware Player and browse for a virtual image, follow these steps:

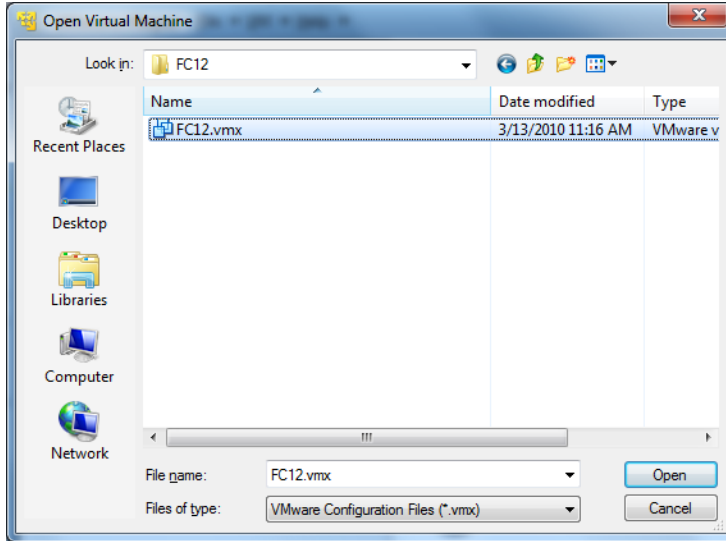
1. Start the VMware Player software by selecting Start->VMware->VMware Player from your Windows Start menu.
2. When the software loads, you should see a screen similar to this:



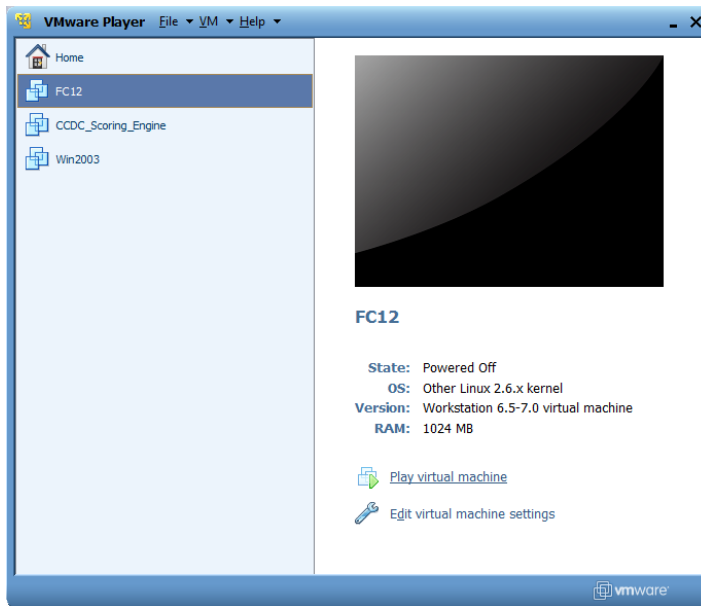
3. Click on “Open a Virtual Machine”. This will open a file browsing much like this one:



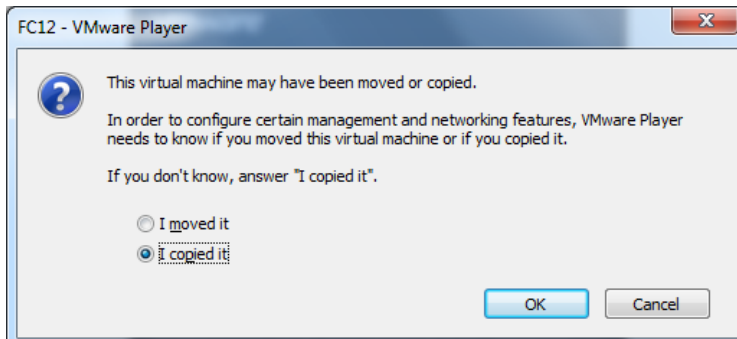
4. Browse to the directory where you’ve downloaded or unzipped a virtual image. Click to select the .vmx file associated with the virtual image you wish to start and click the “Open” button:



5. This will take you back to the main VMware Player screen:



6. Click on the “Play virtual machine” link to start your virtual system. If this is the first time you’ve started the image you will probably see a pop-up like this:



Make sure “I copied it” is selected and then click on “OK” to continue.

7. The next screen you may see will list the removable devices that can be associated with and accessed by the virtual image. Click “OK” to continue.



8. You will see the virtual image go through a boot-up process similar to the one every computer goes thru – this is because VMware images simulate “virtual” computers complete with a boot-up process, simulated hardware, and so on. When the virtual image has finished booting, you will see a login screen or welcome screen just as you would on a physical computer loaded with the same operating system that is running inside your virtual image. For example, a virtual image running Fedora Core (a free Linux-based operating system):



9. Congratulations! You have now booted a virtual image.