



P r o f e s s i o n a l E x p e r t i s e D i s t i l l e d

VMware Workstation – No Experience Necessary

Get started with VMware Workstation to create virtual machines
and a virtual testing platform

Sander van Vugt

[PACKT] enterprise 
PUBLISHING professional expertise distilled

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BIRMINGHAM - MUMBAI

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First published: August 2013

Production Reference: 1160813

Published by Packt Publishing Ltd.
Livery Place
35 Livery Street
Birmingham B3 2PB, UK.

ISBN 978-1-84968-918-2

www.packtpub.com

Cover Image by Duraid Fatouhi (duraidfatouhi@yahoo.com)

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I would like to thank my wife, Carmen for her support and patience over the years I have spent chasing my passion for technology.

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Preface

VMware is the world leader in virtualization solutions. VMware offers products to virtualize the data center, and also solutions that help you set up test environments. This book is about VMware Workstation, the most versatile solution that can be used to set up a test environment to develop new software solutions, or to test complex architecture before taking it into production.

What this book covers

Chapter 1, Installing VMware Workstation, explains how to install VMware Workstation on Windows or Linux computers. It also describes the recommended hardware to set up a virtualization environment.

Chapter 2, Installing Virtual Machines, describes what to do before even starting the installation of the first virtual machine, such as setting up storage or networking. It also explains how to create different types of virtual machines.

Chapter 3, Working with Virtual Machines, shows you how to get around and perform some of the most common tasks in VMware Workstation as VMware Workstation offers several options to make it easier to work with virtual machines.

Chapter 4, VMware Workstation behind the Scenes, describes how VMware Workstation is organized. It teaches you about the different files that are used, and the processes in use to offer all of the required services.

Chapter 5, Networking VMware Workstation, shows how to set up the different types of network that can be used in VMware Workstation environments.

Chapter 6, Accessing Virtual Machines Remotely, teaches you how to access virtual machines from a distance, using solutions such as the integrated web server that you can use.

Chapter 7, Converting Virtual Machines, shows how to convert virtual machines, which help you to import virtual machines that have been created on other virtualization platforms.

Chapter 8, Cloning and Snapshots, teaches you how to work with clones and snapshots, which allow you to set up a test environment in an easy and versatile way.

Chapter 9, Sharing Virtual Machines, teaches you how to share virtual machines. It also covers how to easily share the machines that you've created with other people you want to work with.

What you need for this book

To learn how to work with VMware Workstation, you need a copy of VMware Workstation. This can be obtained from www.vmware.com.

Who this book is for

This book is written for system administrators and developers who want to set up test environments to verify the working of new products in isolated and secure environments.

Conventions

In this book, you will find a number of styles of text that distinguish between different kinds of information. Here are some examples of these styles, and an explanation of their meaning.

Code words in text, database table names, folder names, filenames, file extensions, pathnames, dummy URLs, user input, and Twitter handles are shown as follows: "The entire configuration of the virtual machine is specified in the `.vmx` file".


A block of code is set as follows:


```
# Disk DescriptorFile
version=1
encoding="UTF-8"
CID=bb3b482f
parentCID=ffffffff
```

Any command-line input or output is written as follows:

```
inet6 fe80::250:56ff:fec0:8/64 scope link
    valid_lft forever preferred_lft forever
```

New terms and **important words** are shown in bold. Words that you see on the screen, in menus or dialog boxes, for example, appear in the text like this: "Click on **Add Network** to add a new network".

 Warnings or important notes appear in a box like this.]

 Tips and tricks appear like this.]

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1

Installing VMware Workstation

In this chapter, you'll learn how to install VMware Workstation. The chapter is not just about executing a wizard by clicking on next, next, and finish, you'll also learn how to configure the computer that will run VMware Workstation wisely and perform an advanced installation on either Windows or Linux.


Configuring the host computer

Before starting the installation of VMware Workstation, you should take care of the host computer on which you want to use VMware Workstation. Sure, any computer that meets the minimal requirements will work, but if you choose the appropriate configuration, you'll benefit more from your VMware Workstation installation. In this section, we'll spend a few words on using the most appropriate configuration for your computer.

CPU and CPU cores

Every virtual machine that you'll install will work as a computer by itself, and the total number of CPU cores in your computer will be available as the maximum number of CPUs that you'll allocate to a virtual machine. However, if you want to get the best performance out of your virtual machines, it is a good idea to not configure more virtual CPUs than the total number of CPUs and CPU cores in your computer. This means that if you have four cores in total, ideally you shouldn't run more than three virtual machines with one core each at the same time. As the number of virtual CPUs that are in use gets higher than the total number of CPUs in your computer, CPUs must be shared, and that is not good for performance.

There is no formal number of CPU cores, so if you're on a budget for hardware, you can run VMware Workstation on a computer that has only one core. However for best possible performance, this is not recommended.

 **Linux cgroups**
If you are running VMware Workstation on Linux, you can use cgroups. With cgroups, you can define groups of resources that make sure that every VM always has a dedicated amount of system resources available; a nice and efficient way to use the hardware in the best and most optimal way.

Memory

If a computer runs out of physical RAM, it starts swapping to disk. Using VMware Workstation, you want to avoid your computer starting to swap at all times. To make sure this never happens, the total size of RAM in your computer must be more than the total amount of RAM in use by all the virtual machines, with an addition of 2 GB for the host operating system for smooth operation. This means that a typical computer that is going to be used for VMware Workstation will have at least 4 GB of RAM or more if possible. But if you're on a budget and want to create virtual machines that don't need much RAM, you can work with VMware Workstation on a minimal 1 GB of RAM.

Disk space

A very important part of the configuration of the host system is the available disk space. Typically, each virtual machine needs a couple of gigabytes of available disk space; so a minimal configuration will need at least 10 GB of available disk space, whereas on a dedicated test machine that is going to run several virtual machines, you might need hundreds of gigabytes of free disk space.

If you're looking for good performance, just having the available disk space is not enough. This is because you don't want the virtual machine disk file to be fragmented. To avoid fragmentation, it is recommended that you use a machine where a separate disk is dedicated to the storage of VMDK files. The benefit of this that you can avoid fragmentation, and you'll have one disk that is dedicated to the operating system and another disk that is dedicated to handling virtual machine I/O requests.

Getting VMware Workstation

To get VMware Workstation, you'll typically download it from www.vmware.com. From the VMware site, you can either download a trial version or purchase VMware Workstation. Once you've got the VMware installation file and a registration code, you can start the installation. You can also create an account at the VMware site that allows you to easily access all of your previous purchases. In this section, you'll learn how to buy your own copy of VMware Workstation and how to access purchased products from your VMware account.

Purchasing VMware Workstation

The following procedure describes how to get VMware Workstation:



Support

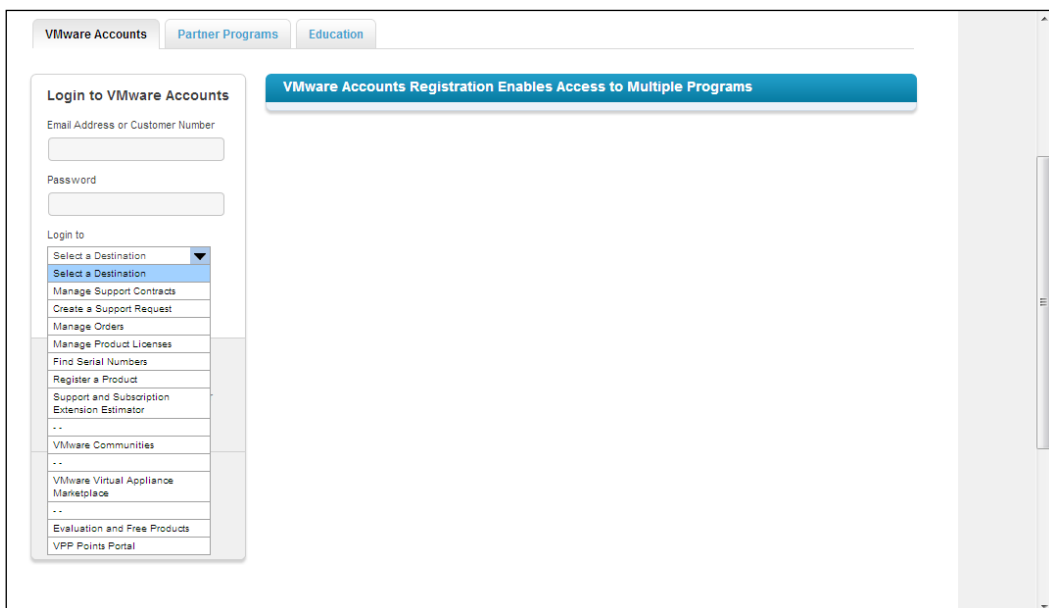
There is a supported version of VMware Workstation, but it is only available if you buy 10 licenses or more. If you're going to use VMware Workstation in a business environment and you want easy access to help, buy the supported version. VMware offers basic support that is 12 hours a day from Monday to Friday or business support that is 24 hours a day, 7 days a week. When purchasing support, you can select a contract period of either one year or three years. If support is important for you, I recommend that you buy Production support. The price difference is small, and for this small difference you will have 24/7 support.

1. Start a browser and go to www.vmware.com. Click on the **VMware Store** button and navigate to **Desktop Products | VMware Workstation 9**.
2. Select **Buy Now** if you have never bought VMware Workstation before. If you have a recent version, click on **Upgrade** to pay the discount price.
3. Enter the quantity of VMware Workstation licenses that you want to buy and click on **Add to Cart**. Your shopping cart will now be updated.
4. After indicating what you want to buy, click on **Secure Checkout** to pay for your VMware license. This brings you to a window where you can either log in with an existing VMware account or create a new VMware account and enter your billing information.
5. Click on **Continue** to complete the transaction. You'll now have access to your own version of VMware Workstation.

Setting up your VMware account

After your purchase of VMware Workstation, you can access your account to download it later from the VMware website. You can always download the software from here as well as access the associated license keys.

To access your account on www.vmware.com, click on **My Account** and log in with the e-mail address and password that you created when purchasing VMware Workstation. You'll also see a drop-down list (see the following screenshot) from which you can indicate what kind of information you're looking for. For instance, select **Login to Find Serial Numbers** to get your serial number from the VMware site. After logging in, you'll find a list of all the products that you've purchased as well as a link to download your version of VMware Workstation.



Downloading VMware Workstation

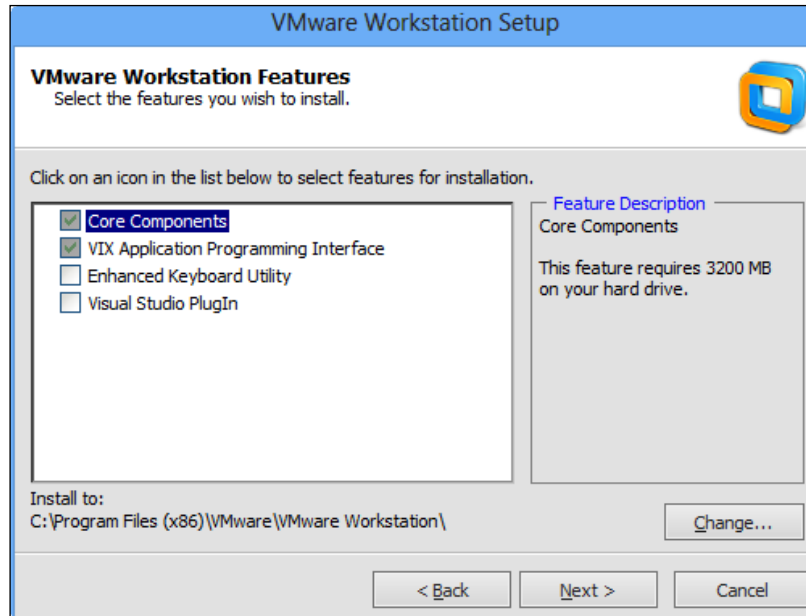
Once you've purchased VMware Workstation, the easiest way to download it is to go to the VMware website and select the **Product & Downloads** link. From here, you can select **VMware Workstation** and easily download the software.

Installing VMware Workstation on Windows

In this section, I'll assume that you've made all appropriate preparations to start the installation of VMware Workstation. This means that you have installed the Windows host operating system and purchased VMware Workstation and are all ready to start the installation. Perform the following steps:

1. Log in to the VMware website and select **Products & Downloads**. From there, select **Download VMware Workstation for Windows** and click on the **Manually Download** link. Accept the license agreement, which will start the download.
2. After downloading the installation file, double-click on it to run it. Allow the installation program to be executed when the Windows Security policy asks if you want to allow it. You will now see the first screen of the **VMware Workstation Setup** wizard. Click on **Next** to start the installation.
3. The installer now gives you the option to select between a typical installation and a custom installation. The typical installation doesn't need much explanation; therefore, in this book I'll explain the options that are presented by the custom installation procedure.
4. You'll now see a list of different program components that you can install. You should at least install the core components as they contain everything that is required to start VMware Workstation. If you want to develop your own tools to manage and monitor VMware Workstation's virtual machines, select the **VIX Application Programming Interface** (this typically only makes sense if you're a developer). The **Enhanced Keyboard Utility** is useful if you need easy access to virtual machines from computers that have a different keyboard layout.

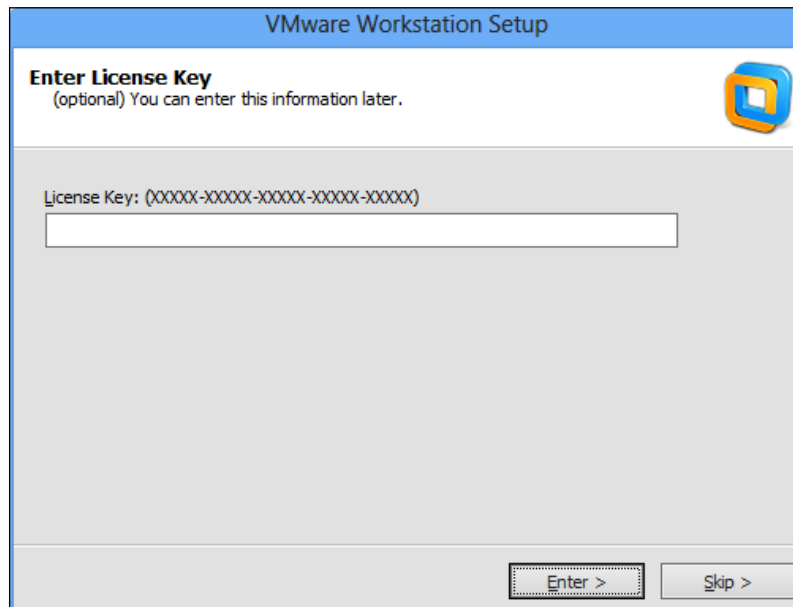
Use the **Visual Studio Plugin** for the easy debugging of error messages generated by VMware Workstation.



Select the options that you want to install

5. With VMware Workstation, you can provide access to your virtual machines using the Workstation Server. This server provides access to shared virtual machines by default over the secure HTTP port 443. In the following screenshot, you'll indicate where virtual machines are stored and on which port the Workstation Server Component will listen. If you want to change these two settings, you can do it here.
6. In the following window, the setup program asks if you want to check for product updates on startup. If you're using this option, you'll get notifications if a newer version is available. Following that there is an option where you will indicate if you want to send anonymous system data and usage statistics to VMware. This option is *On* by default, but you can deselect it here if you don't want to share your usage information with VMware. Following this window, you can indicate if you want shortcuts to launch VMware Workstation on the desktop and start menu's **All Programs** option.
7. After specifying what you want to do with these basic options, you can click on **Continue** to start the installation process. As about 3 gigabytes of files will be copied to your computer now, this will take some time to complete.

- Once all files have been copied to your computer, you are prompted to enter a license key. You don't have to do that at this point; but you will need to enter the license key anyway before you can create your first virtual machine, so you might as well do it now.




Before creating your first VM, you'll have to enter the license key

- The installation is now complete. Click on **Finish** to close the setup wizard.

Installing VMware Workstation on Linux

Installing VMware Workstation on a Windows workstation isn't hard to do; just run the installation file and change a few of the default parameters and it will work. The installation of VMware on Linux is a bit more difficult because you'll have to run a few commands from a shell environment.

 **64 or 32 bits?** If you're using VMware on Linux, you should install a 64-bit flavour of Linux. The handling of hardware resources, especially memory, is much more efficient on a 64-bit Linux version than it is on a 32-bit version of Linux. So for the best possible performance, make sure to use the 64-bit Linux version.

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