Chapter 7
Hands-On Kernel-Based Virtual Machine (KVM)

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ABSTRACT

In this chapter, we will discuss in the introduction to KVM, how to create KVM, both command line and using GUI, briefly on KVM management. This chapter also describes the pre-requisites and a brief introduction on all the pre-requisite software. KVM utilizes the CPU virtualization technology on modern AMD and Intel processors, known as AMD-V and Intel-VT. KVM a is free virtualization solution and does not require any licensing, but if your CPU does not support virtualization KVM will be a waste of time. Linux OS, which is used in this chapter, is Cent OS.

1. INTRODUCTION

KVM (Kernel Based Virtual Machine) this is virtualization software to install and run multiple guest Operating Systems. It uses the hardware virtualization feature to run multiple OS. It is a virtualization infrastructure for the Linux kernel; it was merged into the Linux kernel mainline in kernel version 2.6.20 ("Kernel-based Virtual Machine," n. d.).

KVM can be done in two ways,

1. KVM using Command Line
2. KVM using GUI tools

In this Hands-on chapter, we will see how to install and run KVM, using both command line and GUI tools.

Pre-Requisite

The supported Operating Systems are: Linux, Windows, Solaris, Haiku, REACT OS and more.

KVM will work only if the CPU has a support of hardware virtualization. You can verify if your CPU supports KVM by running the following command on terminal:

```
[root@server ~]#egrep '(vmx|svm)' /proc/cpuinfo
```

This command will return output like the one displayed below, if no output is displayed, then your CPU does not support virtualization, if the output has 'vmx' or 'svm' then your CPU supports hardware virtualization.

```
Sample Output
flags          : fpuvme de psetscmsrpaemce cx8
apicsepmtrrpgemcacmov pat pse36 clflushdtsacpi mmx fxsrsse sse2
ssht tm syscallnx lm constant_tscpni monitor ds_cplvmxest tm2
ssse3 cx16 xtprlahf_lm
```

If you have a Windows OS, you can still use 'Oracle VM VirtualBox' on which you can install your Linux OS where we can create KVMs and for such users, CPU virtualization can also be verified using 'Intel(R) Processor ID Utility'. Navigate to CPU technologies tab and check the value of Intel(R) virtualization technology will be either yes/no shows your CPU's support for virtualization. Only unsupported combination is 64-bit guest on a 32-bit host. Make sure that the Virtualization Technology (VT) is not disabled in your Computer's BIOS ("How to Create Virtual Machines in Linux Using KVM," n.d.).

2. INSTALLING KVM ON CentOS

We are using CentOS to show how to install KVM, now we have the minimum requirement to deploy virtual platform on our host, but we also still have useful tools to administrate our virtual machines such as:

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