What is KVM (Kernel-Based Virtual Machine)?

Getting started with KVM on Linux is a straightforward process. If you want to run other Linux distributions or even Windows on your Linux PC, all you need to do is install a few modules and prepare your PC for virtualization.

The virtual machine is an essential tool for running guest operating systems. Many people have never heard of KVM. So what is KVM? How can you use KVM as a virtualization technology in your projects?

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What is KVM and how is it used?

If you want to turn your Linux system into a multi-machine hypervisor, one of the best virtualization technologies you can use is Kernel-based Virtual Machine (KVM). KVM is built-in on most Linux distributions and allows physical servers to host several separate virtual machines (VMs).

It's important to note that KVM servers are completely different from KVM switches (Keyboard Video Mouse, in this case). Linux KVM serves as a hypervisor that allows several virtual machines to exist on a single host.

Each machine created by the KVM hypervisor will have a virtual BIOS and emulated virtual hardware. The virtual machines under the hypervisor run concurrently and independently of each other. Virtual machine management applications are used to create and work with KVM.

Some people like to use KVM to try other operating systems without any commitment. While professional teams use KVM as a cloud hypervisor or apply it to run large server systems.

KVM has several distinct advantages over other virtualization technologies:

1. Open source and free to use
2. Reputable and tested
3. Built-in on most Linux distributions
4. Unique combination of type 1 and type 2 hypervisor architecture

However, KVM is not without its flaws. Compared to other virtualization technologies like VirtualBox and Hyper-V, KVM is much more difficult to get used to. It also lacks compatibility with any operating system other than Linux.

Despite these flaws, the accessibility and quality of KVM make it an important part of virtualization in Linux. KVM supports many essential features, including direct migration of virtual machines between servers and complete scalability. Therefore, KVM servers are often used for data centers and cloud networks.

KVM Virtualization Deployment for Linux

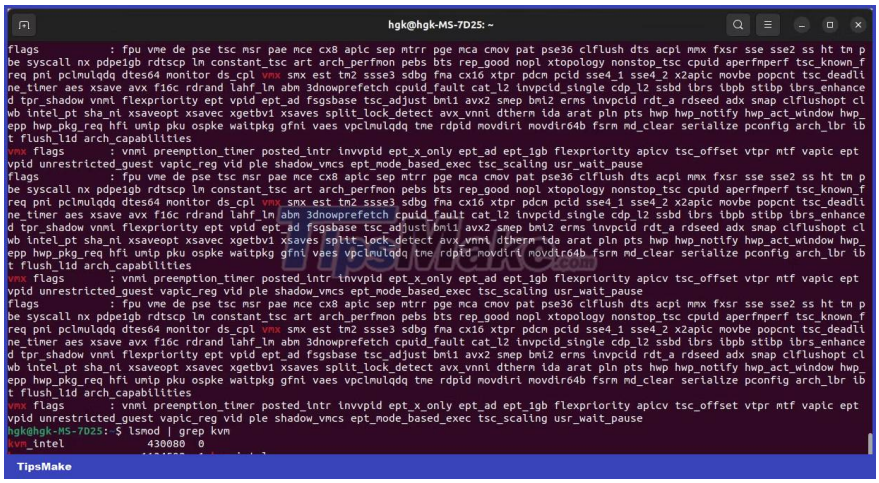
If you want to use KVM virtualization for Linux, you will need to prepare your computer to be a suitable virtualization server. You should start by confirming that your CPU supports hardware virtualization.

Your processor must have hardware virtualization extensions such as AMD-V and AMD64 or Intel-VT and Intel 64. You will need to enable both the CPU virtualization extension and the kernel KVM module on its system.

You can check if CPU virtualization extensions are available and if KVM kernel modules are loaded with the following commands:

```
grep -E 'svm|vmx' /proc/cpuinfo lsmod | grep kvm
```

If a CPU virtualization extension is available, you should be able to find a vmx or svm entry in the list of flags printed by the first command. If you don't see either flag, you may need to enable the virtualization extension in the BIOS.



You should also confirm that the KVM modules are loaded properly by looking for **kvm_intel** or **kvm_amd** in the output of the second command.

If the modules are not available, use these commands to update your repositories, install packages, and confirm that everything is running properly:

```
sudo apt update sudo apt install qemu-kvm libvirt-daemon-system libvirt-clients
```

Finally, you'll need to use a tool like Virtual Machine Manager to create and manage new virtual machines like Manjaro, for example. Research different KVM-compatible virtual machine managers until you find the one that best suits your needs.

Many people prefer to use KVM with the Red Hat Linux platform. Red Hat KVM virtualization is fast and easy to set up. You should consider Red Hat or another reputable solution for any KVM professional application.

After selecting and installing an application, you can use the program documentation for instructions on how to create your new KVM.

Using KVM for Virtualization in Linux

Whether you intend to use KVM for a cloud solution or just want to run a new virtual machine on your PC, KVM is one of the best virtualization technologies you can use.

Building a new virtual machine with KVM is as simple as installing the right modules and using virtual machine manager to create your new VM.