How to Install KVM on Ubuntu 20.04

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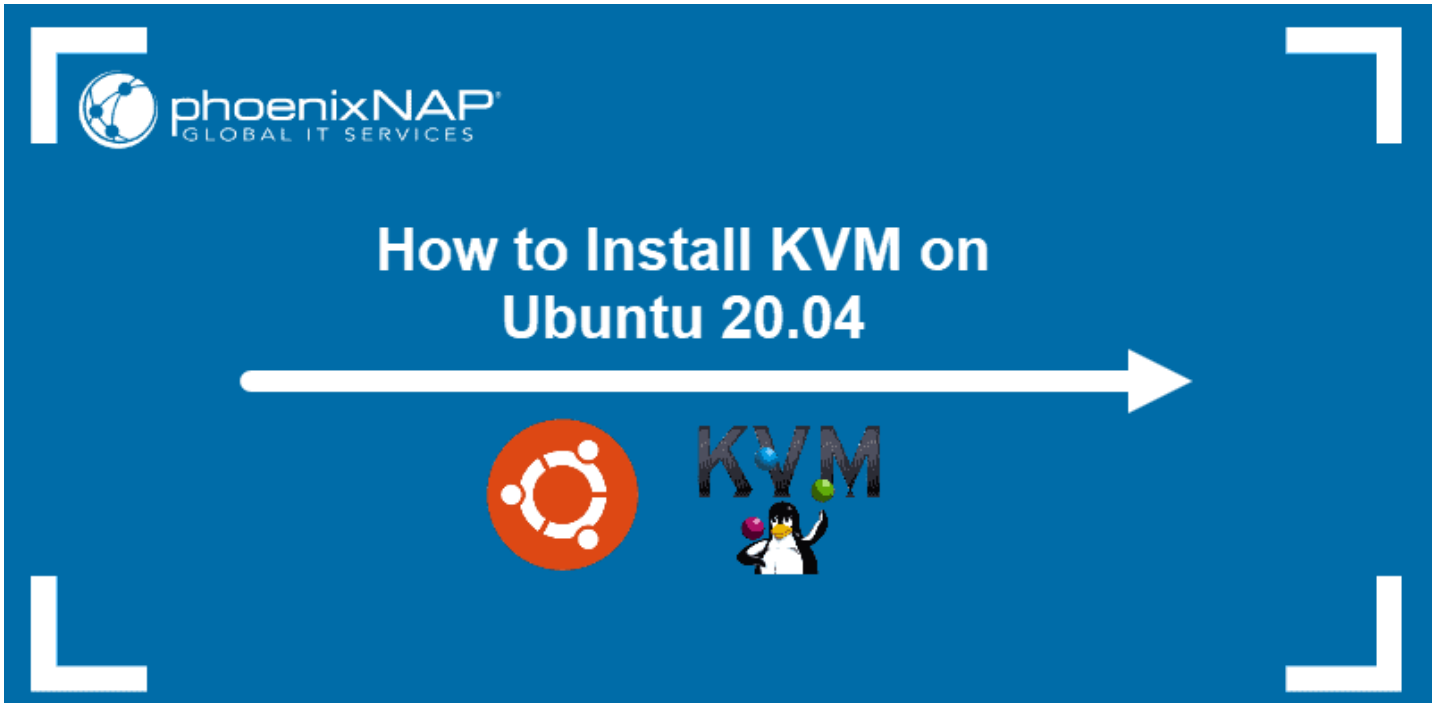
KVM LINUX UBUNTU 20.04

Introduction

A type 2 hypervisor enables users to run isolated instances of other operating systems inside a host system. As a Linux based OS, Ubuntu supports a wide range of virtualization solutions.

Aside from popular third-party apps, such as VirtualBox and VMWare, the Linux kernel has its own virtualization module called KVM (Kernel-based Virtual Machine).

In this tutorial you will learn how to install and set up KVM on Ubuntu 20.04.



- A system running Ubuntu 20.04
- An account with sudo privileges
- Access to the command line/terminal

Check Virtualization Support on Ubuntu 20.04

1. Before you begin with installing KVM, check if your CPU supports hardware virtualization:

```
egrep -c '(vmx|svm)' /proc/cpuinfo
```

Check the number in the output:

```
marko@test-machine:~$ egrep -c '(vmx|svm)' /proc/cpuinfo
2
marko@test-machine:~$
```

If the command returns a value of `0`, your processor is not capable of running KVM. On the other hand, any other number means you can proceed with the installation.

2. Now, check if your system can use KVM acceleration by typing:

```
sudo kvm-ok
```

The output should look like this:

If `kvm-ok` returns an error stating KVM acceleration cannot be used, try solving the problem by installing cpu-checker.

3. To install cpu-checker, run the following command:

```
sudo apt install cpu-checker
```

4. When the installation completes, restart the terminal.

Note: When it is performed for servers, hardware virtualization is referred to as server virtualization.

Install KVM on Ubuntu 20.04

To enable KVM virtualization on Ubuntu 20.04:

- Install related packages using apt
- Authorize users to run VMs
- Verify that the installation was successful

Step 1: Install KVM Packages

1. First, update the repositories:

```
sudo apt update
```

2. Then, install essential KVM packages with the following command:

```
sudo apt install qemu-kvm libvirt-daemon-system libvirt-clients bridge-utils
```

This will start the installation of four KVM packages:

3. When prompted, type **Y**, press **ENTER**, and wait for the installation to finish.

Step 2: Authorize Users

1. Only members of the **libvirt** and **kvm** user groups can run virtual machines. Add a user to the libvirt group by typing:

```
sudo adduser ‘username’ libvirt
```

Replace *username* with the actual username.

2. Now do the same for the kvm group:

```
sudo adduser '[username]' kvm
```

Note: If you need to remove a user from the libvirt or kvm group, just replace `adduser` with `deluser` in the command above.

Step 3: Verify the Installation

1. Confirm the installation was successful by using the `virsh` command:

```
virsh list --all
```

You can expect an output as seen below:

2. Or use the `systemctl` command to check the status of libvirtd:

```
sudo systemctl status libvirtd
```

If everything is functioning properly, the output returns an `active (running)` status.

3. Press `Q` to quit the status screen.

4. If the virtualization daemon is not active, activate it with the following command:

```
sudo systemctl enable --now libvirtd
```

Creating a Virtual Machine on Ubuntu 20.04

1. Before you choose one of the two methods listed below, install virt-manager, a tool for creating and managing VMs:

```
sudo apt install virt-manager
```

2. Type `Y` and press **ENTER**. Wait for the installation to finish.

Make sure you download an ISO containing the OS you wish to install on a VM and proceed to pick an installation method.

Method 1: Virt Manager GUI

1. Start virt-manager with:

2. In the first window, click the computer icon in the upper-left corner.

3. In the dialogue box that opens, select the option to install the VM using an ISO image. Then click **Forward**.

4. In the next dialogue, click **Browse Local** and navigate to the path where you stored the ISO you wish to install.

5. The ISO you chose in the previous window populates the field in Step 2. Proceed to Step 3 by clicking **Forward**.

6. Enter the amount of RAM and the number of CPUs you wish to allocate to the VM and proceed to the next step.

7. Allocate hard disk space to the VM. Click **Forward** to go to the last step.

8. Specify the name for your VM and click **Finish** to complete the setup.

9. The VM starts automatically, prompting you to start installing the OS that's on the ISO file.

Method 2: Using Command Line

Use the **`virt-install`** command to create a VM via Linux terminal. The syntax is:

```
virt-install --option1=value --option2=value ...
```

In the following example, **`virt-install`** is used to install Fedora 33 Workstation.

Tip: For tidier appearance of commands with many options, type a back-slash after each option. That way, when you press **Enter**, the command will not execute, and the cursor will go to the next line.

Options behind the command serve to define the parameters of the installation.

Here is what each of them means:

Option	Description
`--name`	The name you give to the VM
`--description`	A short description of the VM
`--ram`	The amount of RAM you wish to allocate to the VM
`--vcpus`	The number of virtual CPUs you wish to allocate to the VM
`--disk`	The location of the VM on your disk (if you specify a qcow2 disk file that does not exist, it will be automatically created)
`--cdrom`	The location of the ISO file you downloaded
`--graphics`	Specifies the display type

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Conclusion

After reading this article, you should know how to install KVM on Ubuntu 20.04. Additionally, the article describes two methods of setting up virtual machines, using the **virt-manager GUI** and the `virt-install` command.

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