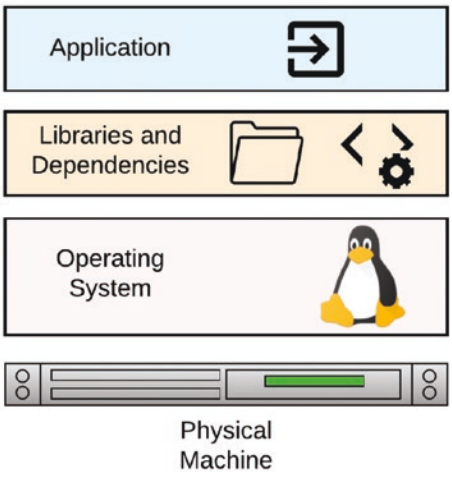

Figure 45-2. *Application running on a single server*

Virtual Machines vs. Containers

Virtual machines (VMs), illustrated in Figure 45-3, emulate the capabilities of a physical machine making it possible to install and run operating systems by using a hypervisor. The hypervisor is a piece of software on the physical machine (the host) that makes it possible to carry out virtualization where multiple guest machines are managed by the host machine.

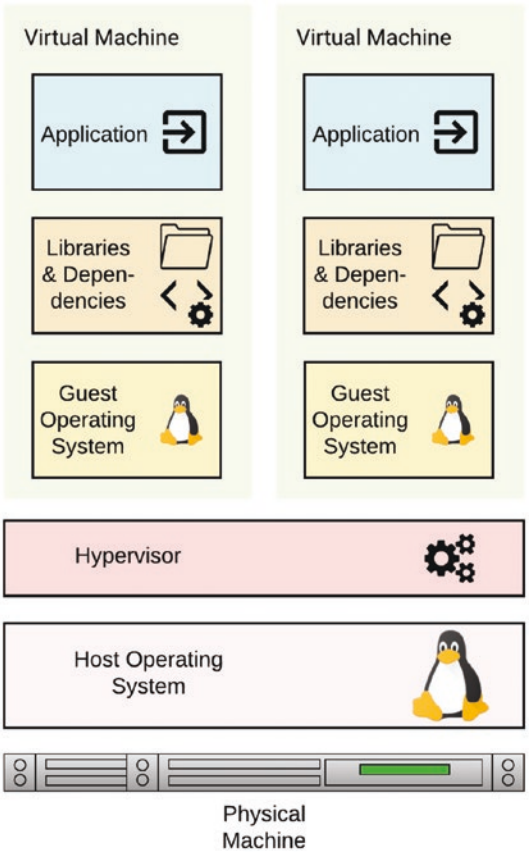

Figure 45-3. *Virtual machines*

Containers on the other hand isolate the environment for hosting an application with its own libraries and software dependencies; however, as opposed to a VM, containers on a machine all share the same operating system kernel. Docker is an example of a container. This is illustrated in Figure 45-4.

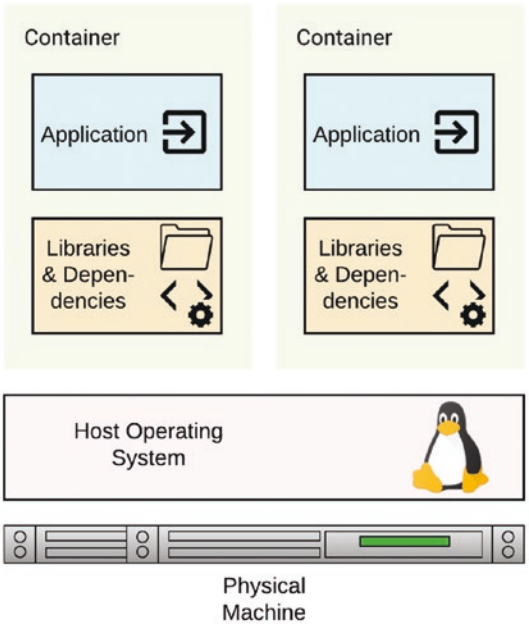

Figure 45-4. *Containers*

Working with Docker

Google Cloud Shell comes pre-configured with Docker.

Key concepts to note are

- Dockerfile: A Dockerfile is a text file that specifies how an image will be created.
- Docker images: Images are created by building a Dockerfile.
- Docker containers: Docker containers are the running instance of an image.

The diagram in Figure 45-5 highlights the process to build an image and run a Docker container.