

It's important to use containers to improve efficiencies when developing larger applications, when deployed in a cloud environment, and they can significantly boost application performance to minimize operational costs. Containers give developers the ability to create smaller, better performing workloads for their applications. This makes it easier to shift these workloads from on premises to public and private cloud networks.

In project one I used the containers to change from a regular user to a root user such as jump box provisioner to clever docker name and elk containers. I used the containers to improve the operating systems, reducing the size of the vm, and using lightweight applications. This means that each application's storage capacity can be managed independently from other connected services, providing better flexibility and control. By using containers in your virtualized cloud environments, you can build a stable, secure, flexible, and scalable infrastructure to support your ongoing digital transformation. Azure container instances allow us to run containers without using any third party services or without managing any kind of virtual machines. So it provides us a platform as a service that allows us to upload our containers and then run them. In my windows powershell I log into my jump box provisioner then I ran the commands `sudo docker container list -a`, `sudo docker start`, and `sudo docker attach`. Once running these commands to verify its running correctly you would see the user change into a root user. You can achieve the same thing without using the container with only a VM. It will just take more to use a vm because it is heavy, requires more memory, runs its own OS, and takes long start-up times. The biggest advantage of not using containers is that they are more securable fully isolated and provide hardware-level virtualization.

There are a lot of disadvantages. A container is a lightweight alternative to full machine virtualization that involves encapsulating an application with its own operating environment. A virtual machine is an operating system or application environment that is installed on software, which imitates dedicated hardware. A container is a software package that consists of everything to run applications. Unlike a VM, which virtualizes the underlying computer, a container virtualizes the OS. It is at the top of a physical server, and its host OS is usually Windows or Linux. Each container shares the host OS kernel, binaries and libraries. Moreover, it is only possible to read the shared components in a container.