What Is Virtualization in Cloud Computing?

Cloud computing and the various cloud services provided these days rely on cloud virtualization, which is one type of virtualization technology. When cloud storage is provided to users, applications and data can be stored on the cloud and accessed from any location.

Virtualization in cloud computing isn’t easily contrasted with virtualization technology—it *uses*virtualization technology. Cloud computing is a type of service uses virtualization technology.  customers can use only the parts of the service or resources they need, without needing the accompanying physical infrastructure themselves. cloud virtualization technology for storage infrastructure allows users to access huge amounts of storage as they need it, and scale this need up and down as necessary, without needing any of their own storage.

Virtualization in cloud computing allows a provider to virtualize servers, storage, or other physical hardware or data center resources, which can then, in turn, allow them to provide numerous services such as infrastructure, software, and platforms

What is containerization?

containerization enables you to deploy multiple applications using the same operating system on a single virtual machine or server.

The container shares the kernel of the host OS with other containers, and the shared part of the OS is read-only. Therefore, the containers are lightweight, so you can deploy multiple containers on a single server (or a VM)—no more dedicating an entire server to a single application. And, you only have one OS to maintain. Scaling up becomes fast and easy, without the need for more server space.  Containerization solves any number of problems for software development and deployment.

What are data centers?

Data centers are simply centralized locations where computing and networking equipment is concentrated for the purpose of collecting, storing, processing, distributing or allowing access to large amounts of data. They have existed in one form or another since the advent of computers. In fact NJIT has a data center on campus!

data centers serve as the principal repositories for all manner of IT equipment, including servers, storage subsystems, networking switches, routers and firewalls, as well as the cabling and physical racks used to organize and interconnect the IT equipment. A data center must also contain an adequate infrastructure, such as power distribution and supplemental power subsystems. This also includes electrical switching; uninterruptable power supplies; backup generators; ventilation and data center cooling systems, such as in-row cooling configurations and [computer room air conditioners](https://searchdatacenter.techtarget.com/definition/computer-room-air-conditioning-unit); and adequate provisioning for network carrier (telco) connectivity. All of this demands a [physical facility](https://searchenterpriseai.techtarget.com/feature/Data-center-energy-usage-combated-by-AI-efficiency) with physical security and sufficient square footage to house the entire collection of infrastructure and equipment.

What is Kubernetes?

[Kubernetes](https://ubuntu.com/kubernetes), an open-source project made available by Google in 2014. Kubernetes is an orchestrator of container platforms, such as Docker. Kubernetes allows users to define the desired state of their container architecture deployment on various substrates. Following user input, Kubernetes can deploy and manage multi-container applications across multiple hosts, taking action if needed to maintain the desired state. This level of automation has revolutionized the container space as it created the framework for features such as scalability, monitoring and cross-platform deployments.

What is Docker?

Docker was launched in 2013 by Docker, Inc. as an open source containerization platform. It promised an easy way to build and deploy containers on the cloud or on-premises and is compatible with Linux and Windows. Although Docker did not introduce a new concept, its ‘new way to deploy software’ and ‘faster time-to-market’ messaging appealed to users so much that Docker soon became shorthand for containers and the default container format.

Docker streamlines the creation of containers with tools such as the Docker file and [docker-compose](https://docs.docker.com/compose/). It also helps developers move workloads from their local environment, to test up to production by removing the cross-environment inconsistencies and dependencies. This results in faster delivery of the software and an increase in quality.

Differences between Docker Swarm and Kubernetes?

Docker Swarm is orchestration technology similar to Kubernetes. Docker Swarm is naturally tightly integrated within the Docker ecosystem and focuses on the clustering of Docker containers.

A major difference between Docker and Kubernetes is that Docker runs on a single node, whereas Kubernetes is designed to run across a cluster.

Another difference between Kubernetes and Docker is that Docker can be used without Kubernetes, whereas Kubernetes needs a container runtime in order to orchestrate.

Since its initial release in 2015, Kubernetes has been widely adopted, and at this point, has become the de facto standard for container management and orchestration. Kubernetes provides an infrastructure-level framework for orchestrating containers at scale, and for managing user interaction with them.

In much the same way, Docker has become the standard for container development and deployment. Docker provides a platform for developing, deploying, and running containers at a much more basic, nuts-and-bolts level. It is the ground on which the Kubernetes framework sits.

steps to store an image on the docker repository:

1.upload a docker base image

2.install the tool in the image

3.commit the image

4.push the image