Introduction to Docker

Analyzing TCGA data in the cloud course
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- "Build, Ship, and Run Any App, Anywhere"

- "Docker is a tool that can package an **application and its dependencies** in a virtual container that can run in isolation on any Linux server, whether on premises, public cloud, private cloud etc."

- DockerHub can host images (free when public)

- Created by (in France) by Solomon Hykes, first release March 2013, open source.

A Virtual Machine?

- "Docker uses the resource isolation features of the Linux kernel such as cgroups and kernel namespaces, and a union-capable file system such as OverlayFS and others to allow independent "containers" to run within a single Linux instance, avoiding the overhead of starting and maintaining virtual machines"

Singularity

- Users running docker need to have sudo access

- This is not something we can do on shared machines like HPC cluster

- Singularity solves this problem

- And the good news is that it can easily run docker containers!