**DOCKER**

**Foundation**

Docker is a set of platforms as a service (PaaS) product that use OS-level virtualization to deliver software in packages called containers. Containers are isolated from one another and bundle their own software, libraries, and configuration files; they can communicate with each other through well-defined channels. Because all the containers share the services of a single operating system kernel, they use fewer resources than virtual machines. The service has both free and premium tiers. The software that hosts the containers is called Docker Engine. It was first started in 2013 and is developed by Docker, Inc.

Docker Inc. was founded by Kamel Founadi, Solomon Hikes, and Sebastien Phal during the Y Combinator Summer 2010 startup incubator group and launched in 2011. The startup was also one of the 12 startups in Founder's Den first cohort. Hikes started the Docker project in France as an internal project within dot Cloud, a platform-as-a-service company.

Docker debuted to the public in Santa Clara at Pichon in 2013.[14] It was released as open-source in March 2013. At the time, it used LXC as its default execution environment. One year later, with the release of version 0.9, Docker replaced LXC with its own component, libcontainer, which was written in the Go programming language.

In 2017, Docker created the Moby project for open research and development.

**Operation**

Docker can package an application and its dependencies in a virtual container that can run on any Linux, Windows, or macOS computer. This enables the application to run in a variety of locations, such as on-premises, in a public cloud, and/or in a private cloud. When running on Linux, Docker uses the resource isolation features of the Linux kernel (such as groups and kernel namespaces) and a union-capable file system (such as Overlays) to allow containers to run within a single Linux instance, avoiding the overhead of starting and maintaining virtual machines. Because Docker containers are lightweight, a single server or virtual machine can run several containers simultaneously. A 2018 analysis found that a typical Docker use case involves running eight containers per host, and that a quarter of analyzed organizations run 18 or more per host. The Linux kernel's support for namespaces mostly isolates an application's view of the operating environment, including process trees, network, user IDs and mounted file systems, while the kernel's groups provide resource limiting for memory and CPU. Since version 0.9, Docker includes its own component (called "lib con trainer ") to directly use virtualization facilities provided by the Linux kernel, in addition to using abstracted virtualization interfaces via libvirt, LXC and system-spawn.

Docker implements a high-level API to provide lightweight containers that run processes in isolation.