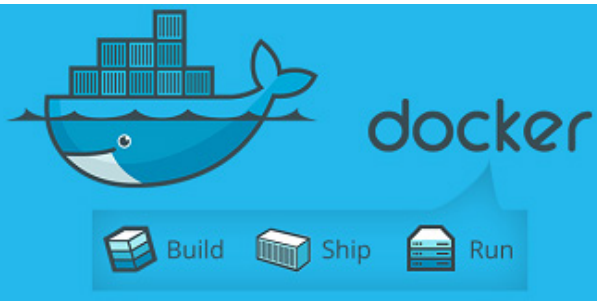
Innovate!

CAPABILITIES



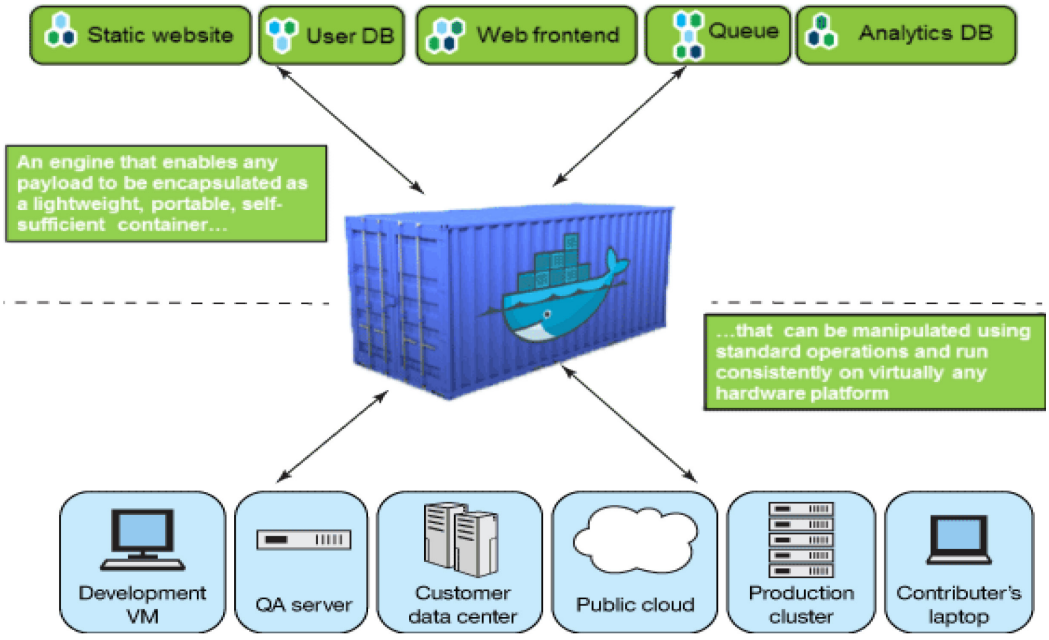
- Open-Source
- Automate
- Bundle Apps
- Any environment
- Mix environments
- Eliminates dependencies
- Modular
- Scalable
- Version Control

WHAT

Docker is an open-source tool that automates the development, deployment and running of applications inside isolated containers. Containers allow developers to bundle up an application with all the parts it needs, such as Operating System requirements, libraries and other dependencies, and ship it as one package. And because Docker is an open platform, anyone can contribute to its development to build out features that aren't yet available.

Docker containers are similar to VM's (Virtual Machines) but without the heavy system resources required. Docker makes it easy to run multiple containerized processes without duplicating the virtualized resources. This also makes it easy to run multiple versions or instances of the same program without configuration headaches and port collisions.

With Docker, developers can focus on writing code without worrying about the system on which their code will run. Applications become truly portable. They can repeatedly run on any other machine running Docker with confidence. For operations staff Docker is lightweight, easily allowing the running and management of applications with different requirements side by side in isolated containers. This flexibility can increase resource use per server and may reduce the number of systems needed because of its lower overhead, which in turn reduces cost.



Innovate! is an 8(a), woman- and minority-owned consulting firm focused on driving measurable business value, making a difference in the world, empowering our employees, and exploring the boundaries of what's possible with our clients.

For more information on how Innovate! can support you, contact Frank Roberts (208) 699-2712

WHY

There are a dozen reasons to use Docker, but the top 3 are consistency, speed and isolation.

Consistency: Docker provides a consistent environment for your application from development all the way through production. When an application is in a Docker container, the code being developed and tested locally is exactly the same build artifact that goes into production. There are no changes in application runtime environments.

Speed: A new process can be rapidly run because the image is preconfigured and installed with the needed dependencies. It takes the challenges out of the equation.

Isolation: By default each Docker container that's running is isolated from the network, the file system and other running processes.

A fourth reason is Docker's layered file system. Starting from a base image, every change made to a container or image becomes a new layer in the file system. As a result, file system layers are cached, reducing the number of repetitive steps during the Docker build process AND reducing the time it takes to upload and download similar images. It also allows saving the container state. This is particularly useful if, for example, troubleshooting is needed to decipher why a container is failing. The file system layers are like Git, but at the file system level. Each Docker image is a particular combination of layers in the same way that each Git branch is a particular combination of commits.

BARRIERS

The biggest barrier is current knowledge base. Some developers might not fully understand Docker's utility or simplicity and might think it's more complicated than it really is. The time needed for hands-on experimentation can be hard to come by and developers often don't have the bandwidth to allocate engineering cycles to something new.

It also takes a mind shift to translate a current development solution into a Dockerized development solution. It can be difficult for developers to accept the concept of keeping the supporting service containers separate from the application containers, and understanding they can all be running on different operating systems and versions while being linked together.

Fortunately, Docker isn't too hard to learn. It's easy to play with and the learning curve is relatively small.

WHERE

Currently Innovate! employees use Docker on the LCMAP project at the USGS EROS Data Center.