CloudAcademy Blog

Getting Started with Docker: how to use it on the Cl

November 26, 2014 by Andrea Colangelo

Containers, and in particular Docker based ones are **the Big Thing every talks about** and works with these days, and in fact we frequently get que about getting started with Docker. Many people and companies really ta the max and try to do everything in them including tasks which in the pa had only considered full VMs for, like untrusted third-party tenants. Pret much everyone uses docker or LXC now to deploy workloads, run CI tes even to have an insulated environment to develop applications with a sp set of libraries and a dedicated configuration. This is especially convenie when you want to share that all across multiple computer or with your colleagues.

So, what is this Docker everybody is talking about and how can you take advantage of it?

What is Docker?

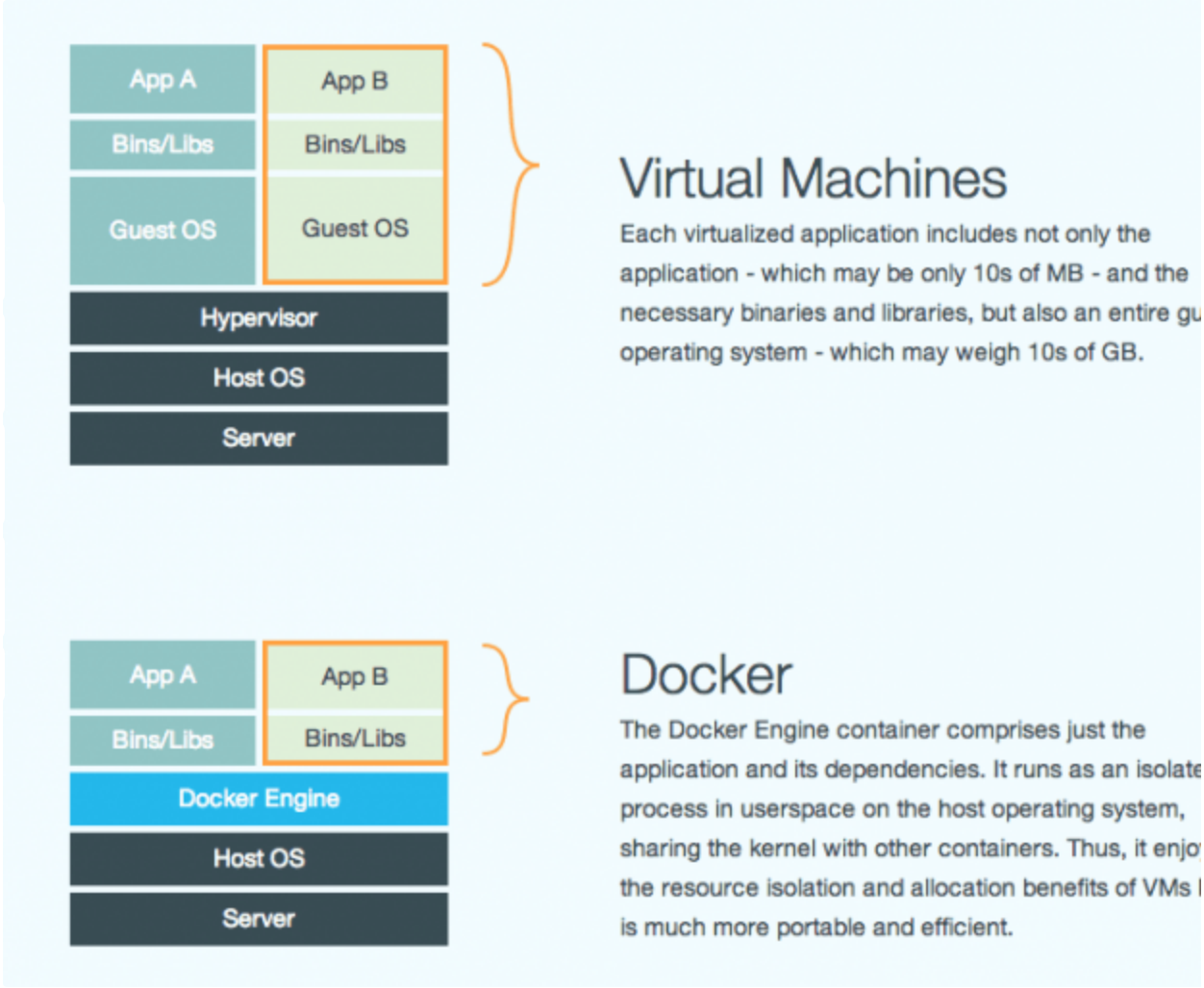
We have a great course about getting started with Docker, and its first le is all about the question "What is Docker?". The course goes in deep deta bout this wonderful open source software and the logic behind it.

evertheless, Docker is basically a **wrapper around Linux Container**, an ld software to create containers on Linux, as you might easily imagine. ctually, the latest versions of Docker are using a brand new library inste XC, but it's a change under the hood with no impact on high-level unctionality.

nce it exploits LXC (or this new libcontainer library), Docker containers uilt on top of facilities like cgroups and namespaces provided by the Lin kernel, so they are not traditional virtual machines and do not require a separate operating system. Instead, they use those kernel's functionality **completely isolate the application's view of the operating system**. So resources are confined, services are restricted, multiple containers can s the same kernel, but each container can be constrained to only use a def amount of resources such as CPU, memory and I/O. If you add the fact t Docker container can start in an handful of milliseconds, you probably n understand how cool the whole thing is.

Using Docker to create and manage containers makes it easier to create distributed systems by allowing multiple applications, worker tasks, and processes to run autonomously on a single physical machine or across a spectrum of virtual machines. And that's why **Docker is finding its heave the Cloud**, where a lot of providers, and especially tier-1 players like Ama

Google and Microsoft are devoting some of their resources to add compatibility and support for Docker.



Getting started with Docker

Despite the huge complexity hidden under the hood, getting started wit Docker is quite easy, also thanks to it Git-style syntax. If you are familiar that VCS, and you probably are if you are interested in Docker, you will s many concepts shared among the two. The base to get a Docker contain running is by **starting an image** containing all the files and settings and everything is needed to run the container. I won't spend any more seconds discussing all the details about the Docker syntax and usage, as

well-explained both in the *Getting Started with Docker* course I already t
you about and in its followup "Docker: advanced concepts".

The key factor here is that **it's quite easy to grasp the basic concepts of Docker** and that helped a lot in making the difference about its huge spr
fact, as we have just seen, Docker has not reinvented the wheel, rather it
rapped around an existing, solid and well-working technology adding a
atures that helped it make the big jump. Nowadays, Docker Inc. is a
ell-established startup, who raised more then 40 millions of dollars so
nd is seeing a larger and larger ecosystem growing around it. In fact, ma
osting services were born to help developers deploy applications and D
ontainers on the Internet

Docker hosting services

Indeed, Docker hosting services are among the first companies born in t
ecosystem. These are ***aaS services providing virtual machines** to deplo
Docker images and/or container to, sometimes with a good degree of
customization of the underlying infrastructure. Sometimes, these servic
add APIs or other software layers in addition to the standard Docker feat
making them full-fledged PaaS services.

We already published a comparison among the 4 most important Docker
services in another post, and I really recommend you to read it if you are
interested in learning more about them. Sometimes, subtle variations am
the various services available can make a huge difference according to yo
needs, so ensure to read that post thoroughly. Nevertheless, after we pu
that post, the top players in the Cloud world made their moves to enhan
support for Docker on their respective platforms.

Docker support by Amazon, Google, and Microsoft

Amazon announced a brand new service built on top of EC2 during the l re:Invent. Actually, everyone was expecting a move there by the giant of Cloud world, given that its closest competitors had announced somethir similar already. This new service has been called ECS, that is **EC2 Contai Service**, and is currently available as a preview. The initial focus of ECS i ddress multi-container multi-host clustering, which aligns with custom equirements for high-performance and scale as they move their Docke istributed applications into production. Amazon already had some supp ocker in its Elastic Beanstalk PaaS service, but this one looks way close ne Infrastructure level, and we expect it will provide huge flexibility to t eeds of the developers. We are looking forward to running an extensive bout this service, and you can expect a deep review very soon.

On the other side, Google developed a dedicated support for Docker lon before AWS. There is a specific service to help getting started with Dock GCP, under the name of Google Container Engine. It allows to **deploy an docker container on GCP virtual machines**, paying just for the Google Compute Engine instances that you will provision for your containers an extra costs. The interesting thins here is that at the core of this Google Container Engine service there is another open source software that Go actively developing, that is Kubernetes. This is a **cluster manager for containers** that can schedule replicas across a group of node instances. A master instance exposes the Kubernetes API, through which tasks are defined. Kubernetes spawns containers on nodes to handle the defined t Also, the number and type of containers can be dynamically modified according to need. It's a very advanced technology, and I'm looking forw see Google Container Engine out of the alpha, as they may introduce bac

incompatible changes until the stable version will be released. Google is devoting a lot of efforts and resources to this project, and is probably the advanced platform with regard to Docker support.

Microsoft recently added support for Docker containers too. The initial support for Docker on Linux-based Azure VMs has been added in June, but that was just the bare minimum they needed to make Docker available to last month though, they took this thing more seriously, and they announ stronger commitment in the field. In particular, they announced the ope sourcing of Docker Engine for Windows Server, support for the Docker C orchestration APIs, and the federation of Docker Hub images in the Azu allery. Although none of them seems as interesting as the dedicated se rovided by Google or Amazon, the fact that even a company like Micros howing such a great interest for Docker confirms how important this oftware it is and how crucial the container technology has become.

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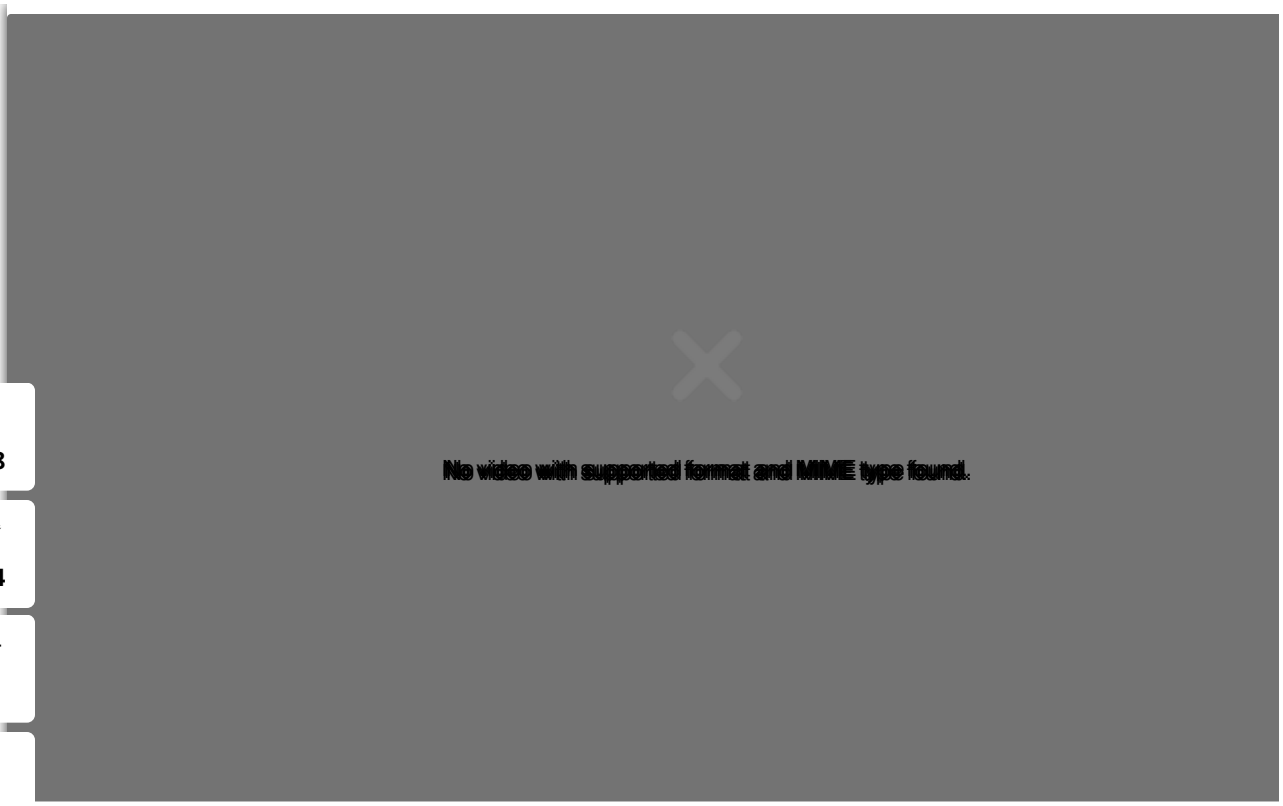

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simone_brunozzi • 9 months ago

Great post. I have played with Docker since its early beginnings, and this blog post and course are very well done, especially for people that are new to Docker. It was a good r for me :)

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