

Getting Started with Docker

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Technical Evangelist

dockercon

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Agenda

- Why Docker?
- Docker Platform
- Docker Installation
- Docker (Basic Image) Workflow
- Docker (Build) Workflow
- Docker (Volumes) Workflow



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Why Docker?

- Isolation
- Lightweight
- Simplicity
- Workflow
- Community

Docker Community

- 21,500+ GitHub stars
- 400M+ Docker Engine downloads
- 100,000+ "Dockerized" applications in the Docker Hub Registry
- 180+ Docker Meetup Groups in 50 countries
- 930+ community contributors
- 3 to 4 Million - Developers using Docker
- 50,000 third-party projects on GitHub using Docker as well as partnerships spanning PaaS, operating systems, hosting services, CI platforms, and more.
- Over 100 user-generated case studies available from companies such as eBay, Rackspace, New Relic, Gilt, Spotify, Cloudflare, Yandex, Cambridge Healthcare, Yelp and RelateIQ.

**Docker Engine
+ Docker Hub
= Docker Platform**



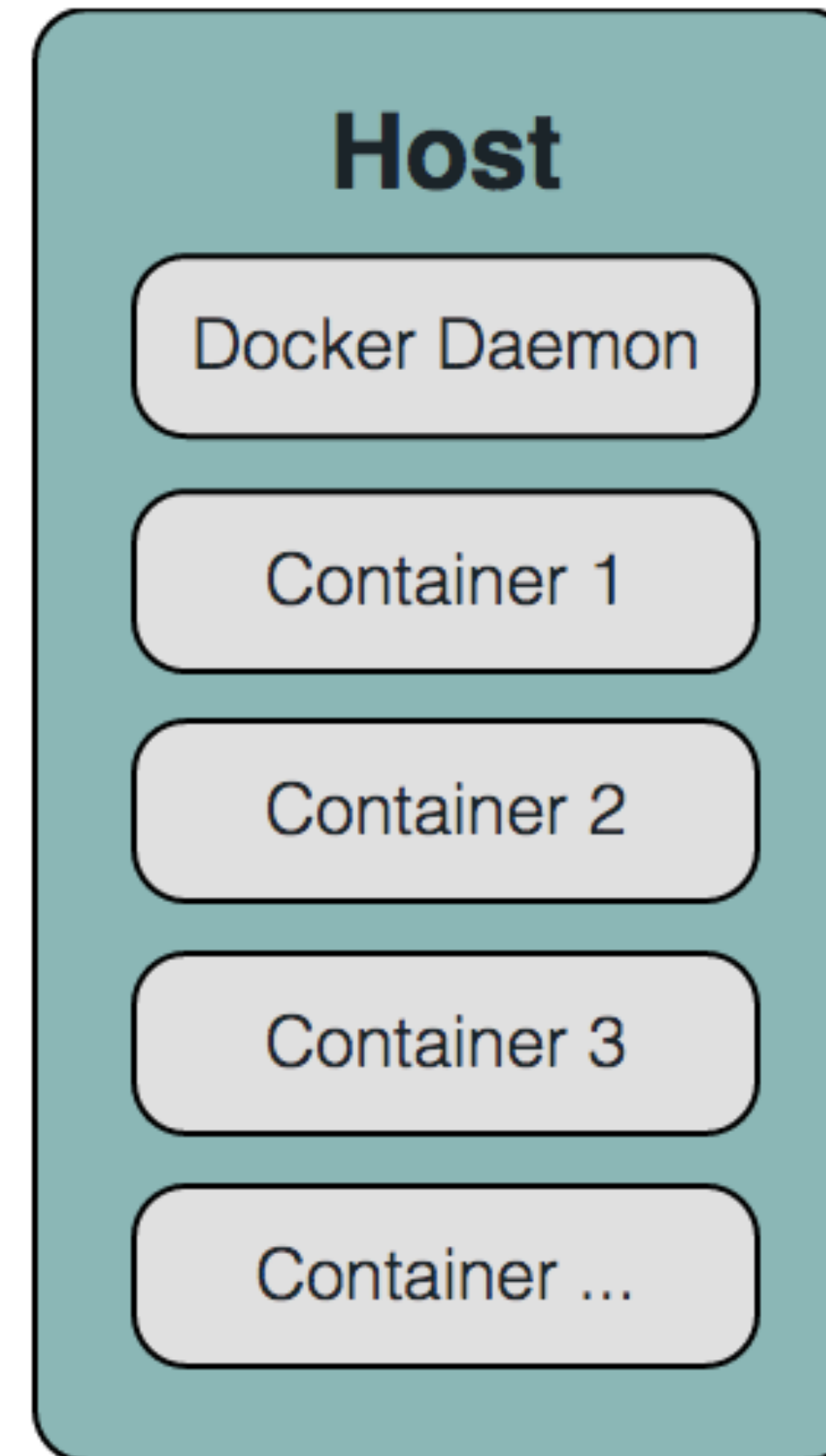
Docker Engine

- **Docker Daemon**
 - Builds Images
 - Manages Containers
 - RESTful API
- **Docker CLI**
 - Command Line Client

Docker Architecture

Docker Client

`docker pull`
`docker run`
`docker ...`



Docker CLI

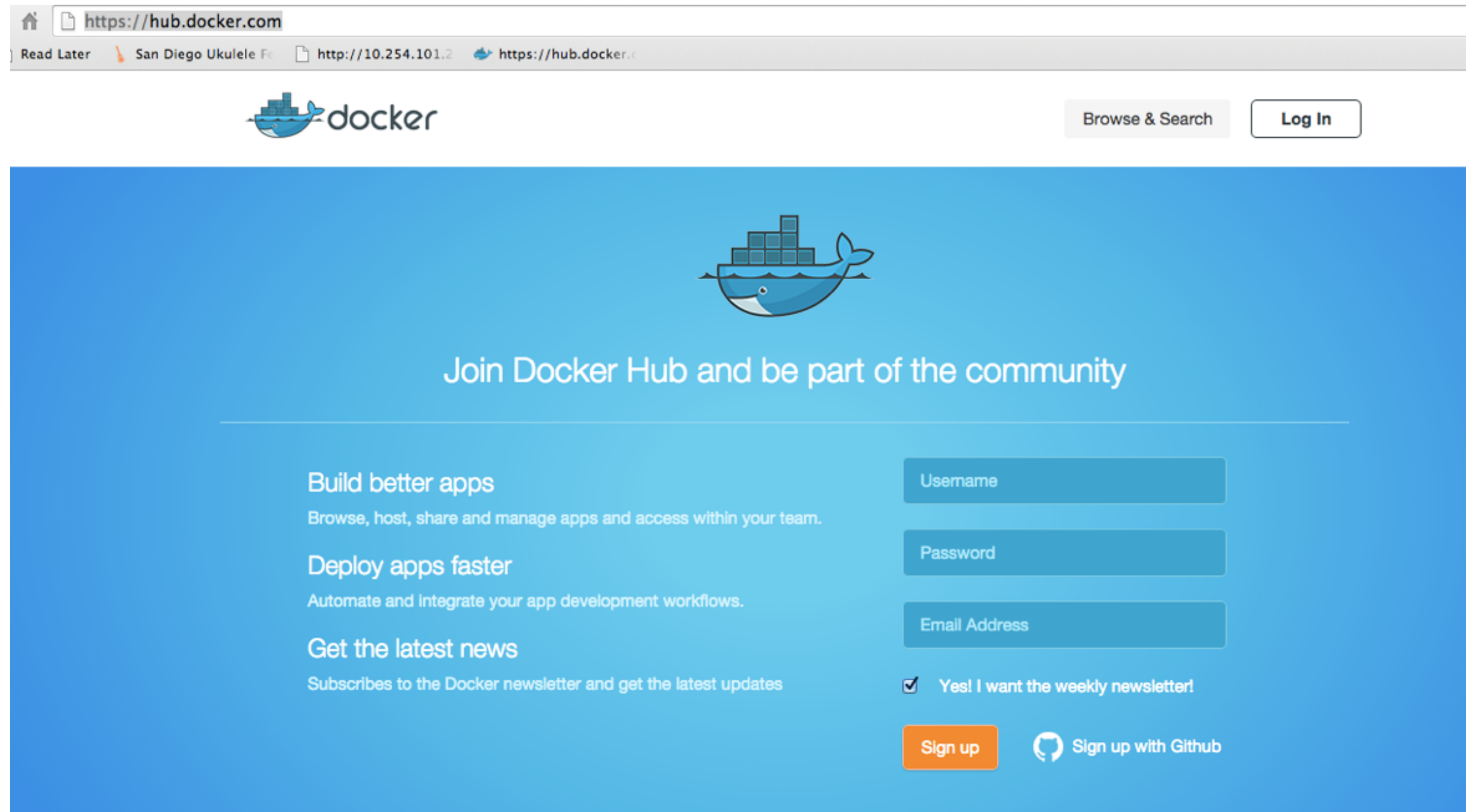
- `docker build` # Build an image from a Dockerfile
- `docker images` # List all images on a Docker host
- `docker run` # Run an image
- `docker ps` # List all running and stopped instances
- `docker stop` # Stop a running instances
- `docker rm` # Remove an instance
- `docker rmi` # Remove an image



Docker Hub

- Provides Docker Services
- Library of public images
- Storage for your images
 - free for public images
 - cost for private images
- Automated builds

Docker Hub



The screenshot shows the Docker Hub homepage. At the top, there's a browser address bar with the URL `https://hub.docker.com`. Below the address bar, the Docker logo is on the left, and "Browse & Search" and "Log In" buttons are on the right. The main content area has a blue background with the Docker whale logo at the top center. Below the logo, the text "Join Docker Hub and be part of the community" is displayed. Underneath, there are three columns of text: "Build better apps" (Browse, host, share and manage apps and access within your team.), "Deploy apps faster" (Automate and integrate your app development workflows.), and "Get the latest news" (Subscribes to the Docker newsletter and get the latest updates). To the right of this text is a sign-up form with fields for "Username", "Password", and "Email Address". Below these fields is a checked checkbox for "Yes! I want the weekly newsletter!". At the bottom of the form are two buttons: "Sign up" (orange) and "Sign up with Github" (with the Github logo).

https://hub.docker.com

Read Later San Diego Ukulele Fe http://10.254.101.2 https://hub.docker.com

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Browse, host, share and manage apps and access within your team.

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Get the latest news
Subscribes to the Docker newsletter and get the latest updates

Username

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Email Address

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Sign up Sign up with Github

Docker Installation

Install Latest

Use (for latest)

```
wget -qO- https://get.docker.com/ | sh
```

Pre release

```
wget -qO- https://test.docker.com/ | sh
```

On UBUNTU 14-10

Repo install usually back leveled

```
sudo apt-get install -y docker.io  
sudo service docker restart
```

On RHEL/Centos/Fedora

Repo install usually back leveled

```
sudo yum install docker  
sudo service docker start
```

Docker Installation

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March 18, 2015

DOCKER TUTORIAL 1 – INSTALLING DOCKER

This is a casual tutorial series. We will start out first with very simple sessions on how to [install Docker](#) and use the docker run command. In future videos we will hit more advanced topics.

This first video talks a little bit about releases in Docker and the current release cadence. We also show examples of installing from default repo's on Ubuntu, Centos and Fedora as well as installs from get.docker.com and installing from the Docker binary.

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Docker (Basic Image) Workflow

- Find an Image on Docker Hub
- Pull an Image from Docker Hub
- Run an Image on Docker Host
- Stop an Instance
- Remove an Instance
- Remove an Image

Docker (Basic Image) Workflow

Docker Workflow (Part 1)

```
docker search ubuntu
docker search -s 10 ubuntu

docker pull ubuntu
docker images

docker history ubuntu

cid=$(docker run -itd ubuntu)
echo $cid
docker ps

docker exec $cid ip a

docker stop $cid
docker rm $cid

docker rmi ubuntu
docker images
```

Demo



```
Repos $
```



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Docker Run Command Basics



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March 25, 2015

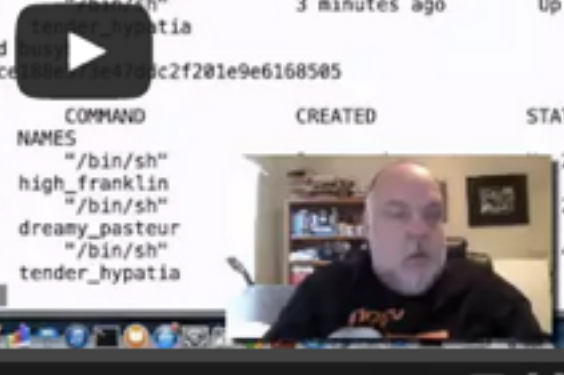
DOCKER TUTORIAL 2 – DOCKER RUN COMMAND BASICS

This is a casual Docker tutorial series. We will start out first with very simple sessions on how to install and use the docker run command. In future videos we will hit more advanced topics.

In this second video we explore some of the simple flags of the docker command. This is another basic tutorial. This time we explore the difference between some of the run flags (e.g., -i -t -d). We also explore the use of the docker ps commands while working with running and stopped containers.

Docker Tutorial 2 - Docker Run Command Basics

```
e17d83af759a0e5ddc5371dd09c079dbc89f76d4230d39350b37c2de8774cd3
vagrant@ubuntu-1i:~$ docker run -d busybox
dfe7767e62498b9ac0f1d030d0fa8539b743e9c2d326cf7b1778a66136a70d8
vagrant@ubuntu-1i:~$ docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED             STA
TUS                PORTS              NAMES
c080524e07a2       busybox:latest     "/bin/sh"           About a minute ago  Up
About a minute     3d63d4b88f02       dreamy_pasteur
3 minutes          busybox:latest     "/bin/sh"           3 minutes ago      Up
3 minutes
vagrant@ubuntu-1i:~$ docker run -itd
dcb9109af77fbd5e8922dc67a8373c2cace0c2f201e9e6168505
vagrant@ubuntu-1i:~$ docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED             STAT
US                PORTS              NAMES
dcb9109af77fbd5e8922dc67a8373c2cace0c2f201e9e6168505
seconds            busybox:latest     "/bin/sh"           About a minute ago  Up
c080524e07a2       busybox:latest     "/bin/sh"           About a minute ago  Up
3 minutes          busybox:latest     "/bin/sh"           3 minutes ago      Up
3d63d4b88f02       dreamy_pasteur
3 minutes          busybox:latest     "/bin/sh"           3 minutes ago      Up
vagrant@ubuntu-1i:~$ docker attach dcb9109af77fbd5e8922dc67a8373c2cace0c2f201e9e6168505
```



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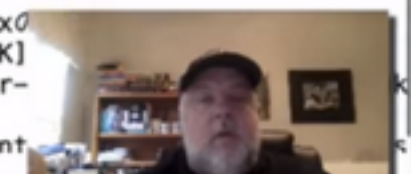
April 8, 2015

DOCKER TUTORIAL 4 – MORE RUN WITH A COUPLE OF EXTRA GOODIES

This is a casual [Docker tutorial series](#). We started out first with very simple sessions on [how to install Docker](#), the [docker run command](#) and had [fun with volumes](#). In future videos we will hit more advanced topics.

Terminal Shell Edit View Window Help

```
h Sup... 2 [OK]
nuagebec/ubuntu Simple always updated Ubuntu docker i
mages... 2 [OK]
nimmis/ubuntu This is a docker images different LTS
vers... 1 [OK]
sylvainlasnier/ubuntu Ubuntu 14.10 root docker images with
commo... 1 [OK]
seetheprogress/ubuntu Ubuntu image provided by seetheprogre
ss us... 1 [OK]
alsanium/ubuntu Ubuntu Core image for Docker
1 [OK]
n3ziniuka5/ubuntu-oracle-jdk Ubuntu with Oracle JDK. Check tags fo
r ver... 1 [OK]
densuke/ubuntu-jp-remix Ubuntu LinuxO
1 [OK]
webhippie/cedarish-ubuntu Heroku cedar-
er bu... 1 [OK]
dposuke/ubuntu=supervisor densuke/ubunt
```



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Docker (Build Image) Workflow

- Build a Local Image
- Run an Image on a Local Docker Host
- Push an Image to Docker Hub
- Pull and Run on another Docker Host

Docker (Basic Image) Workflow

Docker Workflow (Part 2)

```
FROM ubuntu:14.04

RUN \
  apt-get update && \
  apt-get -y install apache2

ADD index.html /var/www/html/index.html

EXPOSE 80

CMD ["/usr/sbin/apache2ctl", "-D", "FOREGROUND"]
```

```
<h1>Docker Rocks!</h1>
```

```
docker build -t apache-test .

cid=$(docker run -itd -P apache-test)

nid=$(docker inspect --format '{{.NetworkSettings.IPAddress}}' $cid)

curl $nid
```


Demo



```
Repos $
```



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Docker Build



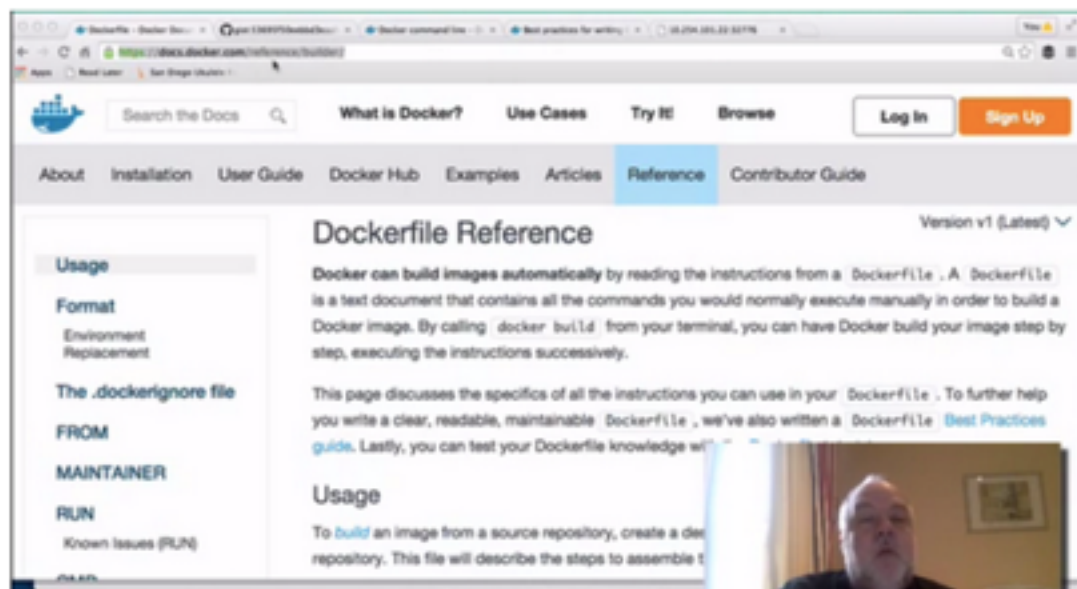
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DOCKER TUTORIAL 6 – DOCKERFILE (PART 1)

This is a casual [Docker tutorial series](#). We started out first with very simple sessions on how to install and use the docker run command. In future videos we will hit more advanced topics.

In this sixth video we cover the basics of a Dockerfile. We cover basic commands such as FROM, RUN and CMD along with other basic Dockerfile commands. Basically the tutorial describes the Dockerfile DSL.



Additional Notes:

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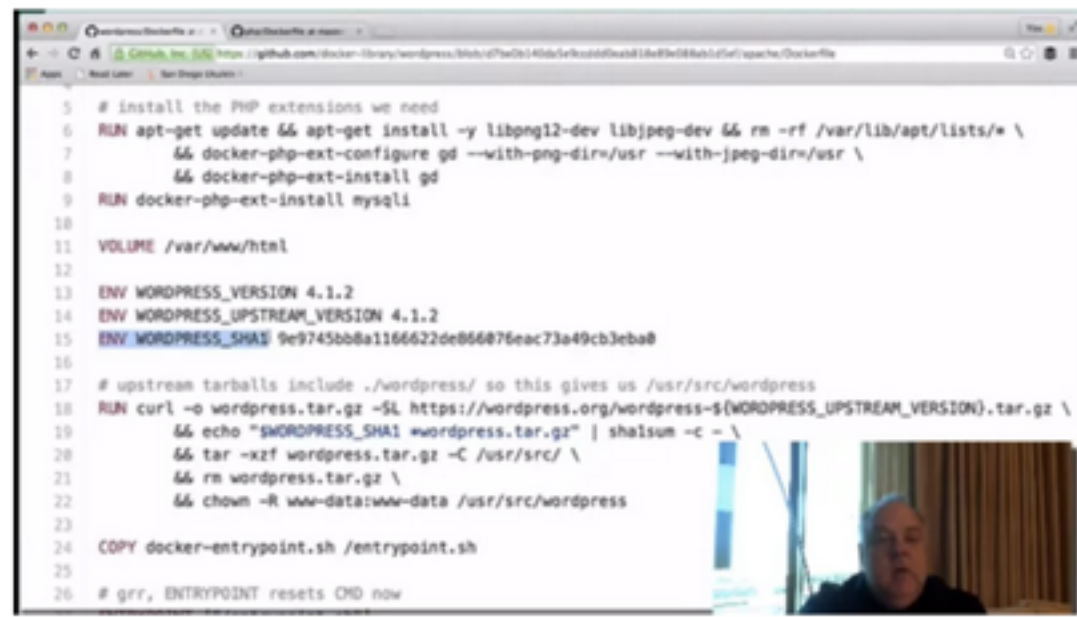


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DOCKER TUTORIAL 7 – DOCKERFILE (PART 2)

This is a casual [Docker tutorial series](#). We started out first with very simple sessions on how to install and use the docker run command. In future videos we will hit more advanced topics.



In this seventh video we cover more advanced uses of building images with Dockerfiles. We will look at a couple of the [Docker Hub](#) repos as different examples to create Apache images..

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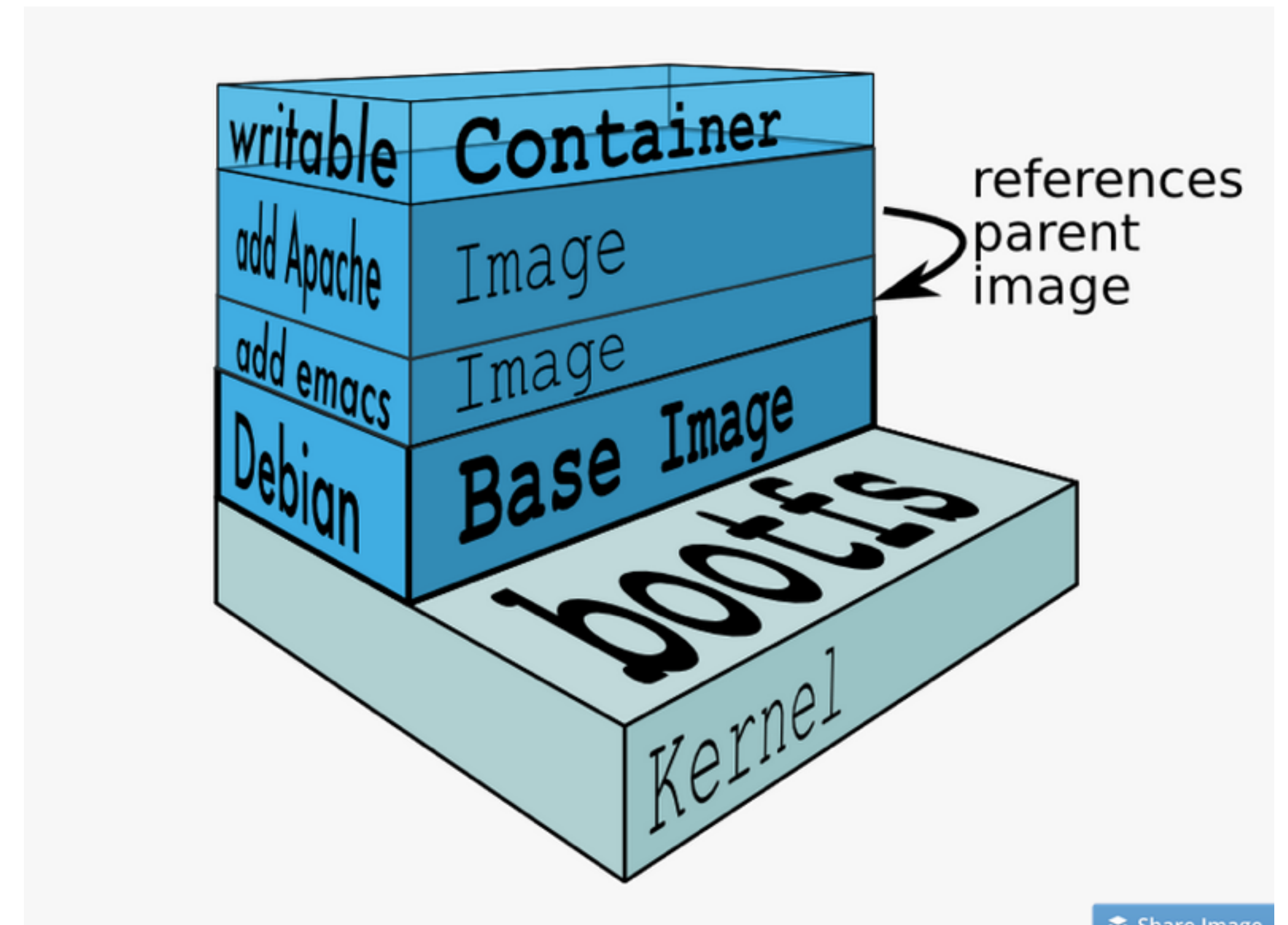
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Docker (Volumes) Workflow

- Using Volumes
- Mounting Docker Host Volumes



Docker (Volumes) Workflow

Docker Workflow (Part 3)

```
docker run -it --name testjob1 -v /tmp1 ubuntu  
mkdir test  
cd test  
touch file1  
touch file2
```

```
docker stop testjob1  
docker start testjob1
```

```
docker exec testjob1 ls /test
```

```
docker run -it --name testjob2 -v /tmp1 ubuntu  
docker exec testjob2 ls /test
```

```
docker run -itd --name testjob3 -v $(pwd)/index.html:/var/www/html/index.html apache-test
```

```
nid=$(docker inspect --format '{{.NetworkSettings.IPAddress}}' testjob3)
```

```
curl $nid
```

```
(Change the index.html file
```

```
curl $nid
```

Demo



```
Repos $
```



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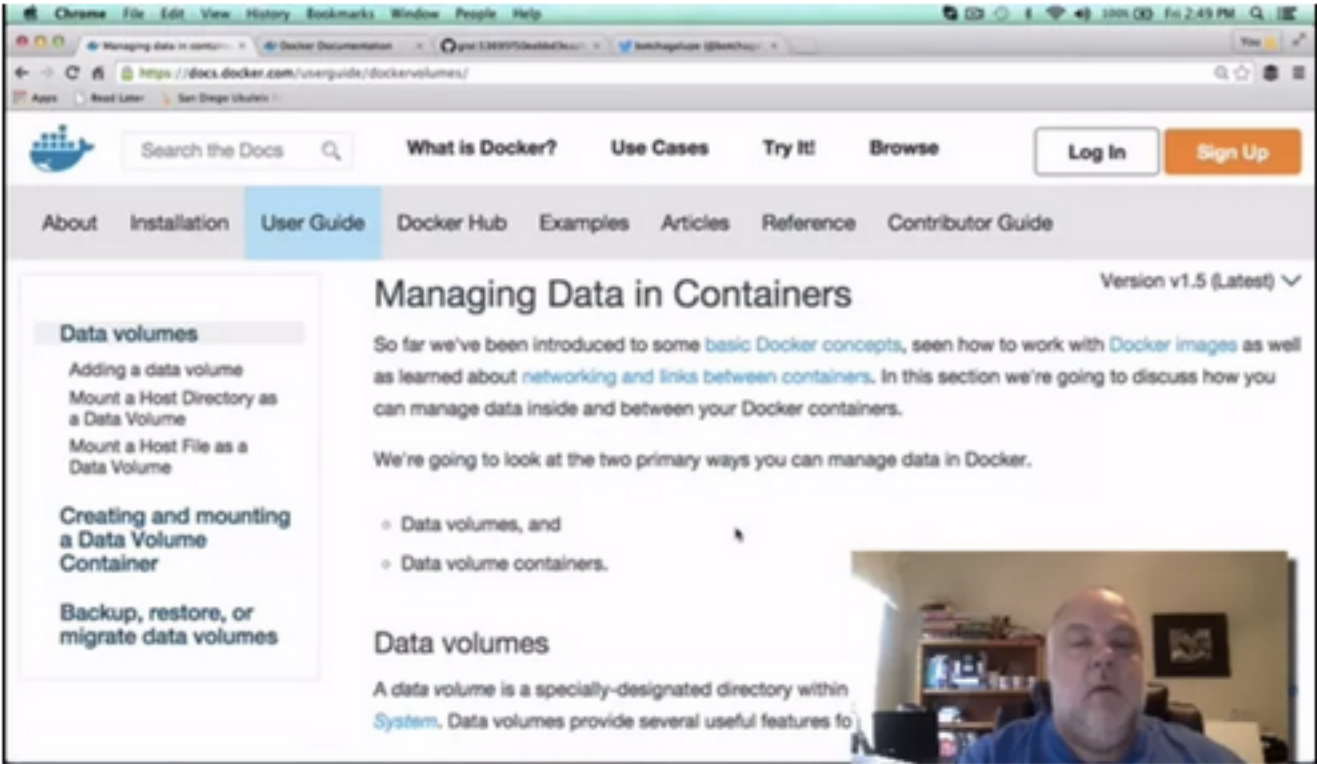
Docker Volumes

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April 1, 2015

DOCKER TUTORIAL 3 – FUN WITH VOLUMES

This is a casual Docker tutorial series. We started out first with very simple sessions on [how to install Docker](#) and use the [docker run command](#). In future videos we will hit more advanced topics.



The screenshot shows the Docker documentation page for 'Managing Data in Containers'. The page is titled 'Managing Data in Containers' and is part of the 'User Guide' section. It includes a sidebar with links to 'Data volumes', 'Creating and mounting a Data Volume Container', and 'Backup, restore, or migrate data volumes'. The main content area discusses 'Data volumes' and includes a video player showing a man speaking.

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References

WHY I LOVE DOCKER... AND WHY YOU'LL LOVE IT TOO

<https://blog.docker.com/2015/03/why-i-love-docker-and-why-youll-love-it-too/>

DOCKER TUTORIAL 1 – INSTALLING DOCKER

<https://blog.docker.com/2015/03/docker-tutorial-1-installing-docker/>

DOCKER TUTORIAL 2 – DOCKER RUN COMMAND BASICS

<https://blog.docker.com/2015/03/docker-tutorial-2-docker-run-command-basics/>

DOCKER TUTORIAL 3 – FUN WITH VOLUMES

<https://blog.docker.com/2015/04/docker-tutorial-3-fun-with-volumes/>

DOCKER TUTORIAL 4 – MORE RUN WITH A COUPLE OF EXTRA GOODIES

<https://blog.docker.com/2015/04/docker-tutorial-4-more-run-with-a-couple-of-extra-goodies/>

DOCKER TUTORIAL 6 – DOCKERFILE (PART 1)

<https://blog.docker.com/2015/04/docker-tutorial-6-dockerfile-part-1/>

DOCKER TUTORIAL 7 – DOCKERFILE (PART 2)

<https://blog.docker.com/2015/04/docker-tutorial-7-dockerfile-part-2/>



Questions

john.willis@docker.com

