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MIRANTIS

# Docker Tips for Better Productivity

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Amber Ernst + Bill Mills

# About Stone Door Group

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- Mirantis Solutions Integrator that helps companies implement DevOps best practices using Docker & Kubernetes
- Docker CE to EE Accelerator Engagement
  - Complete solution for migrating applications to a secure production environment
  - Includes software licensing and consulting services needed to get Docker EE implemented
  - Migrate application workloads and ensure security/regulatory compliance
- Free 5-day trial of Docker EE available on our website

<http://www.stonedoorgroup.com/docker-launcher-request>

# Housekeeping

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- Trouble with your connection?
  - You may dial in via phone - [1.888.788.0099](tel:18887880099) Webinar ID: [742 327 577](https://www.stonedoorgroup.com/webinars/742327577)
  - Email us at [webinar@stonedoorgroup.com](mailto:webinar@stonedoorgroup.com) for assistance
- Q&A
  - Throughout the webinar participants may enter Questions into the Q&A panel, located at the bottom of your screen
  - Our instructors will address your questions following their presentation
- Webinar Recording & Follow Up
  - Following today's session, we will distribute a link to the webinar recording as well as a link to today's presentation

Connect with us at [letsdothis@stonedoorgroup.com](mailto:letsdothis@stonedoorgroup.com)

# Docker Enterprise Social Distance Learning Series

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Register here > <https://www.stonedoor.io/docker-webinar>

Webinar	Title	Event Date/Time	Description
1	<b>Get Docker Enterprise Edition Running in an Hour</b>	April 16, 2020 9.00 - 10.00am PST	Quickly install or upgrade to Docker Enterprise Edition
2	<b>Docker Tips for Better Productivity</b>	April 23, 2020 9.00 - 10.00am PST	Gain an edge in Docker administration
3	<b>Docker Tips for Better Security</b>	May 7, 2020 9.00 - 10.00am PST	Leverage the features of Docker Enterprise Edition for corporate security and regulatory compliance
4	<b>Kubernetes Tips for Better Productivity</b>	May 14, 2020 9.00 - 10.00am PST	Gain an edge in Kubernetes implementation

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# Week #1 - Prize Winners

## US Winners

Achilles D.	TX	Jim X.	CA
Andrew L.	CA	Joshua G.	NY
Brittney A.	AZ	Ken W.	ID
Christopher B.	CA	Kulwinder S.	CO
Don B.	NC	Meiry R.	MD
Elizabeth B.	MN	Srinivasa Rao J.	TX
Femi O.	IL	Tanveer M.	CA
Gene A.	RI	Tim R.	IL
Hamilton R.	TX	William S.	CO
Jianrong H.	MI	William S.	NC

## International Winners

Vijay N.	Germany
Benjamin C.	Mexico
Aaron E.	Canada
Amol K.	Finland
Jeff S.	Malaysia

Congratulations to our prize winners from last week's event!

# Introduction

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Head of Curriculum  
Development, Mirantis

Bill currently teaches,  
develops and maintains the  
Docker Enterprise training  
stack, and is based in  
Brooklyn, NY.

**Bill Mills**



Docker Accredited Instructor  
and Certified Associate, Stone  
Door Group

Amber Ernst is a Docker  
Certified Associate and Docker  
Accredited Instructor for Stone  
Door Group.

**Amber Ernst**

# A Refresher on Docker

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- Scalable
- Easy to maintain
- Easier to get set up



# Dockerfiles

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A **Dockerfile** is a set of instructions that describes the process of building an image.

It contains:

- Files included
- Environment variables
- Installation steps
- Relevant commands
- Networking details

File **context** has a huge influence on the build-time performance of Dockerfiles.



# Keep Your Docker Images Lightweight

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**Context** outlines the specified files that are required to build your container and the larger this context is, the slower your build will be.

**Common causes:**

- large asset files
- additional library files

Once created, you can easily check the size of your Docker image by running the command `docker image`

# Demo: `.dockerignore`

---

Building an image without using `.dockerignore`

Vs

building with `.dockerignore`

# Without `.dockerignore`

---

- Create Dockerfile : `nano Dockerfile`
- Build Dockerfile : `docker build -t testing .`

Image size without `.dockerignore`

```
$ docker images | grep testing
testing   latest      5f1dbed20708    2 seconds ago    154MB
```

# Utilize Multi-Stage Builds To Remove Build Dependencies

**Issue:** When building in consistent environments - the size of our image gets large

**Solution:** Multi-stage builds

# Demo: Multi-Stage Builds

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Multi-stage builds are easy to recognize — they have multiple FROM statements.

- Every FROM starts a new stage of the build process.
- We use the AS keyword to reference our build dependencies and create a consistent environment.

# Docker Command Completion in the CLI

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**Issue:** CLI syntax plentiful and expanding CLI syntax can make it difficult to recall every possible command

**Solution:** Command completion is a plugin available for your terminal that gives you auto-complete options by hitting TAB

# Demo: Installing Command Completion (locally)

---

- To install command completion locally on your mac:  
`brew install bash-completion`
- Next, you would place the appropriate completion script in  
`/etc/bash_completion.d/`
- Completion will then be available after your next login.

Other command completion installation options available:

<https://docs.docker.com/machine/completion/#installing-command-completion>

# Network Tricks

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When it comes to networking, Docker has an internal pool of IPs that it uses for its container's IP addresses.

- Invisible to the outside (default)
- Accessible via bridge interfaces



# To use the Docker Host Network Stack

---

Running this command gives your new container the ability to attach to the same network interface as the Docker Host.

```
$ docker run --net=host
```

Generally speaking, `--net=host` is only needed when running programs with very specific, unusual network needs.

*This command allows reusing the host network stack and is therefore considered insecure.*

# Demo:

---

```
$ docker run --rm -it --network=host ubuntu:trusty ip addr show eth0
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 08:00:27:98:dc:aa brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global eth0
        valid_lft forever preferred_lft forever
    inet6 fe80::a00:27ff:fe98:dcaa/64 scope link
        valid_lft forever preferred_lft forever
```

# To Use Another Container's Network Stack

---

Running this command attaches a new container to the same network interfaces as the other container.

```
$ docker run --net=container:<nameid>
```

You can specify the target container by ID or name.

## Enterprise only: Utilize The Live API To Enhance Automation

One of the featured tools that comes with Docker Enterprise Edition is the Universal Control Plane, or the UCP for short.

- The Universal Control Plane (UCP) API is a REST (representational state transfer) API available using HTTPS.

# Next Steps - Try Docker Enterprise for Free

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If you are new to Docker or you have setup a successful proof of concept and need some direction, Stone Door Group offers our Docker Accelerator. This comprehensive services offering enables you to transition a Docker pet project into a secure production Docker enterprise environment.

<http://www.stonedoorgroup.com/docker-ce-to-ee>

```
docker container run --rm -it sdgdockerlabs/coffee
```

Or reach us at: [letsdothis@stonedoorgroup.com](mailto:letsdothis@stonedoorgroup.com) to have a chat about our experiences with migrations.

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# Q & A

Download slides: [bit.ly/mirantis-stone-door-webinar2](https://bit.ly/mirantis-stone-door-webinar2)



# Why Mirantis Training

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- **Preparation for the real world**
  - Based on years of **production experience** at scale
  - Extensive **hands on labs** to put what you learn into practice
  - Industry standard certifications
- **Where and when you want it**
  - Choice of instructor led classroom or instructor led live online
  - Robust public class schedule from global partners

# Mirantis Training: Docker Enterprise

Get 25% off public classes offered by Global Knowledge and ExitCertified,  
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<b>Docker for Enterprise Operations</b>	Take an extended deep dive into all the features of the Docker Enterprise platform, covering all core operational responsibilities.	<b>3 days</b>
<b>Docker for Enterprise Developers</b>	Explore techniques in software development and continuous integration for container-native applications.	<b>2 days</b>
<b>Docker Troubleshooting &amp; Support</b>	Learn how to troubleshoot and maintain the Docker Enterprise platform in a wide range of day-2 operations scenarios.	<b>2 days</b>

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# Mirantis Training: Kubernetes



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<b>Kubernetes &amp; Docker Bootcamp I (KD100)</b>	Learn Docker and Kubernetes to deploy, run, and manage containerized applications	<b>2 days</b>
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<b>Advanced Kubernetes Operations (CN320)</b>	<b>GA April 30</b> Advanced training focused on production grade architecture, operational best practices, and cluster management.	<b>2 days</b>

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# Thank You for Joining Us Today

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# Source Attribution

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<https://docs.docker.com/engine/reference/builder/>

<https://docs.docker.com/develop/develop-images/multistage-build/>

<https://docs.docker.com/compose/completion/>

<https://docs.docker.com/network/host/>