



# Get Docker Enterprise Edition Running In An Hour

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Amber Ernst + Bill Mills



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

# Introduction

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**Bill Mills**

Head of Curriculum  
Development, Mirantis

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



**Amber Ernst**

Docker Accredited Instructor  
and Certified Associate, Stone  
Door Group

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

# A Refresher on Docker

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



# Community vs Enterprise Edition

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## Docker Enterprise

- Paid Mirantis subscription
- Includes support from Mirantis
- Predictable bi-annual releases
- Certified partner ecosystem
- Enterprise-grade features (security, management, automation)



***Recommended for production use***

## Community Edition

- Free “do it yourself” dev & ops
- Does not include support
- Quarterly stable release for ops

# Limitations to Docker CE

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As organizations move more and more workloads to a container-based solution, they may hit some of the limitations of Docker CE.

**The following are a few items that need to be addressed:**

- Who should have full control over all running containers?
- How do we prevent pushing a piece of code with a critical security vulnerabilities?
- How can we be sure that our container images have not been tampered with?
- Can we provide proof to external auditors, showing that we are compliant with security standards?
- How do we monitor and backup our entire platform configuration?

# Docker Enterprise

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While other (supported) container orchestration platforms exist, Docker Enterprise provides three important key features:

## Choice, Agility and Security

- Run any type of container workload (Kubernetes or Swarm)
- On any type of platform (Linux, Windows and even mainframe)
- On any infrastructure (on-premises data center, public clouds or a combination)



# Upgrading to Docker Enterprise

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Since CE and DE are distributed as separate application binaries, the migration path from CE to DE involves reinstalling Docker and cannot be performed in an existing environment without redeploying the environment.

- Uninstall Docker CE - Uninstall all older versions and associated dependencies

```
$ sudo yum remove docker
```

- Install Docker DE- Set up the repository & Install from the repository

You only need to set up the repository once, after which you can install Docker Engine - Enterprise *from* the repo and repeatedly upgrade as necessary.

```
$ sudo yum -y install docker-ee docker-ee-cli containerd.io
```

# Getting started with Docker Enterprise

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**In our example we will follow a company called MyCorp as they install UCP and DTR.**

MyCorp currently has:

- 5 node setup with 3 managers nodes (manager-0 to manager-2)
- 2 worker nodes (node-0 & node-1)

All nodes run the current version of Docker Enterprise and are clustered in a swarm.

As per best practices, the manager nodes don't run any workload.

# Demo-

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```
[centos@manager-0 ~]$ docker service create --name myweb --replicas 4 -p 8000:80 nginx
ufura4wtqcdb7c5kodvio4uy2
overall progress: 4 out of 4 tasks
1/4: running [=====>]
2/4: running [=====>]
3/4: running [=====>]
4/4: running [=====>]
verify: Service converged
[centos@manager-0 ~]$ docker service create --name myweb-staging --replicas 2 -p 8080:80 nginx
96nxcao6z8f98fxrp8munk6sv
overall progress: 2 out of 2 tasks
1/2: running [=====>]
2/2: running [=====>]
verify: Service converged
```

# Introduction to UCP

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UCP adds enterprise tooling on top of Docker Engine.

- Secure remote cluster access via API and PKI-based client bundles
- Manage all your containerized workloads, on Kubernetes or Docker Swarm, on Windows or Linux from a single UI or API
- Advanced RBAC-based user management system
  - compatible with LDAP and Active Directory
  - integrates with registry solutions such as the DTR.

Also includes additional tooling to simplify tasks such as backup procedures, monitoring, and alerting.

# Demo: Installing UCP

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As UCP is a Docker Swarm application in itself, installation is easy.

```
[centos@manager-0 ~]$ docker container run -- rm -it \  
> -- name ucp \  
> -v /var/run/docker.sock:/var/run/docker.sock \  
> docker/ucp \  
> install
```

# User Management in UCP

The screenshot displays the Docker Enterprise Universal Control Plane (UCP) v3.2.5 interface. On the left is a navigation sidebar with the following items: 'admin' (with a dropdown arrow), 'Dashboard', 'Access Control' (expanded, with a dropdown arrow), 'Orgs & Teams', 'Users' (highlighted), 'Roles', 'Grants', 'Shared Resources' (with a dropdown arrow), 'Kubernetes' (with a dropdown arrow), and 'Swarm' (with a dropdown arrow). The main content area is titled '6 Users'. It features a settings gear icon, a search icon, and two buttons: 'Actions' (with a dropdown arrow) and 'Create'. Below these is a table with three columns: 'STATUS' (with a dropdown arrow), 'USER NAME' (with a dropdown arrow), and 'FULL NAME' (with a dropdown arrow). The table contains six rows of user data, all with a status of 'Active'.

STATUS	USER NAME	FULL NAME
Active	admin	
Active	barry	barry
Active	chloe	chloe
Active	joey	joey
Active	kelly	kelly
Active	shawn	shawn

# DTR

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DTR is a container image repository that integrates with the role-based access control (RBAC) system defined in UCP.

It allows:

- Your team members to digitally sign images on upload
- Verification of those signatures when starting a container
- Configuration of UCP to require multiple signatures

Includes: Security scanning

Enables: cloud-storage solutions

# Installation

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For production environments we recommend setting up three replicas of the DTR on dedicated nodes

- Provides high-availability
  - Allows the security scanning engines to have enough available resources

In our example we'll deploy a single replica of the DTR on node-1.

Make sure there are no services that use port 80 or 443 on the nodes that will run the DTR replicas, as those would conflict with our DTR installation.



# Demo-Implementation

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```
[centos@manager-0 ~]$ docker run -it --rm docker/dtr install \  
> --ucp-node node-1 \  
> --ucp-username admin \  
> --ucp-url https:///<your.manager0.ip.address> \  
> --dtr-external-url https://<your.node-3.ip.address> \  
> --ucp-insecure-tls
```

# In Conclusion

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- Showed you how you can upgrade from Docker CE to Docker Enterprise
  - Without downtime or having to redeploy
- We then installed UCP on top of Docker Enterprise Engine
  - Implemented simple RBAC based access mechanism
- Then, we looked at the DTR
  - Focused on some of the Security and Automation features offered

# 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>

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-webinar1](https://bit.ly/mirantis-stone-door-webinar1)



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# Source Attribution

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<https://docs.docker.com/ee/docker-ee/centos/>

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<https://docs.docker.com/ee/ucp/authorization/ee-advanced/>

<https://docs.docker.com/ee/dtr/>

<https://docs.docker.com/ee/dtr/user/access-dtr/>