



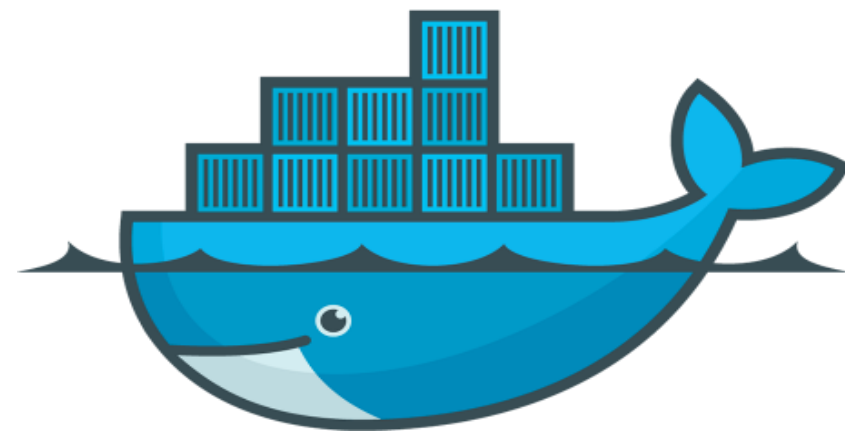
#techsummitCH

# Docker and Microsoft Bringing the benefits of software containers to Windows and Azure

Patrick Chanezon  
Chief Developer Advocate, Docker  
@chanezon



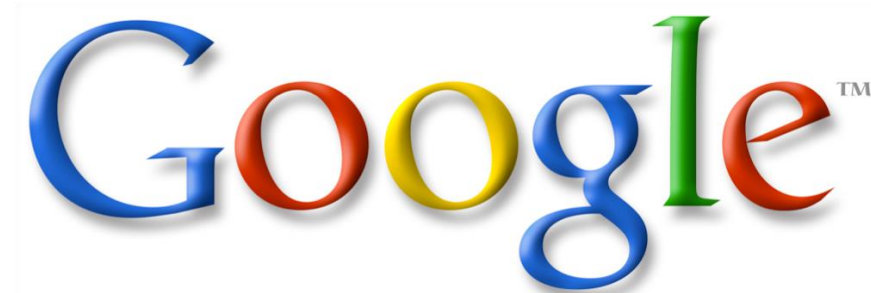
@chanezon



spring



CLOUDFOUNDRY



accenture



French

Polyglot

Platforms

Software Plumber

San Francisco

Developer Relations

# The Docker Platform

Traditional

Micro services

ISV / COTS

Serverless

IoT

Big Data  
ML  
AI

...



# Docker Platform



Cloud



VM

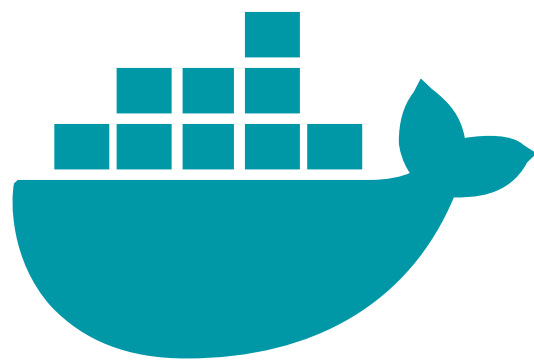


Bare  
Metal



Edge  
Device

# Docker Momentum



**21.0M**  
Docker  
Hosts



**24B**  
Container  
downloads



**77K%**  
Growth in Docker  
job listings

## Industry Standards

**OPEN** CONTAINER INITIATIVE

container **d**



# Enterprise Momentum

Portability      Agility      Security



50% total cost savings

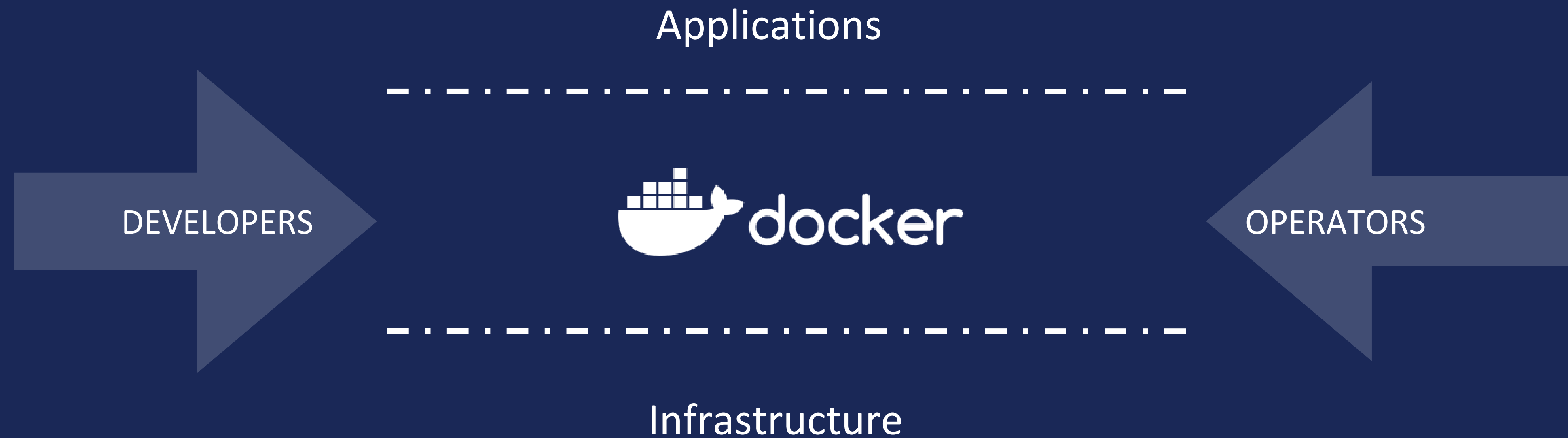


# The Docker Container Platform Enabling the Software Supply Chain

- Diverse Applications
- Disparate Infrastructure
- Lifecycle Management
- Orchestrate Complex Systems
- Secure by Default
- Edge / IoT
- Serverless Anywhere



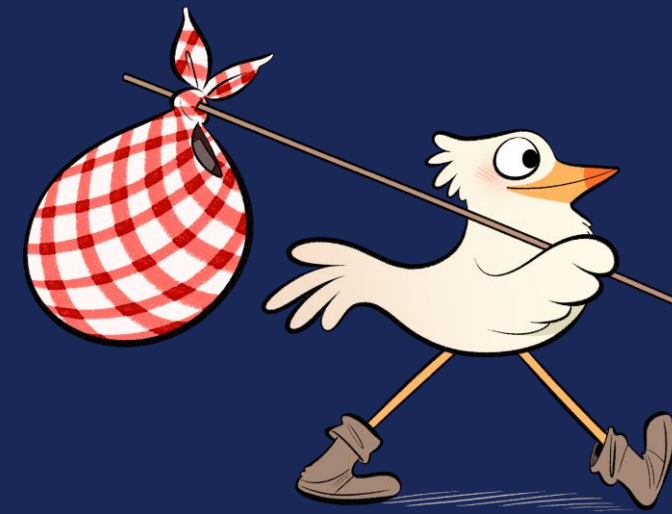
# The Docker Platform in a nutshell



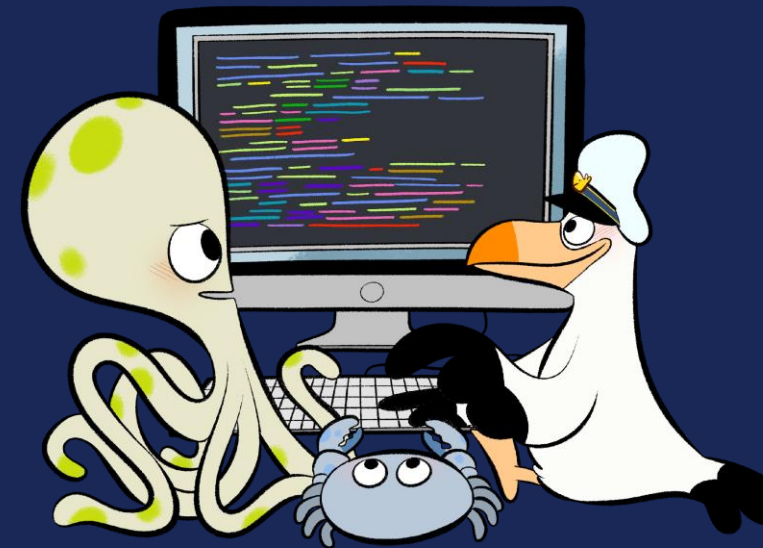


# Core Principles of the Docker Platform

INDEPENDENCE



OPENNESS



SIMPLICITY

# Docker with Swarm and Kubernetes

1 .....→

The best enterprise container security and management

Docker Enterprise Edition

Docker Community Edition

← ..... 2

The best container development workflow

3 .....→

Native Kubernetes integration provides full ecosystem compatibility



← ..... 4

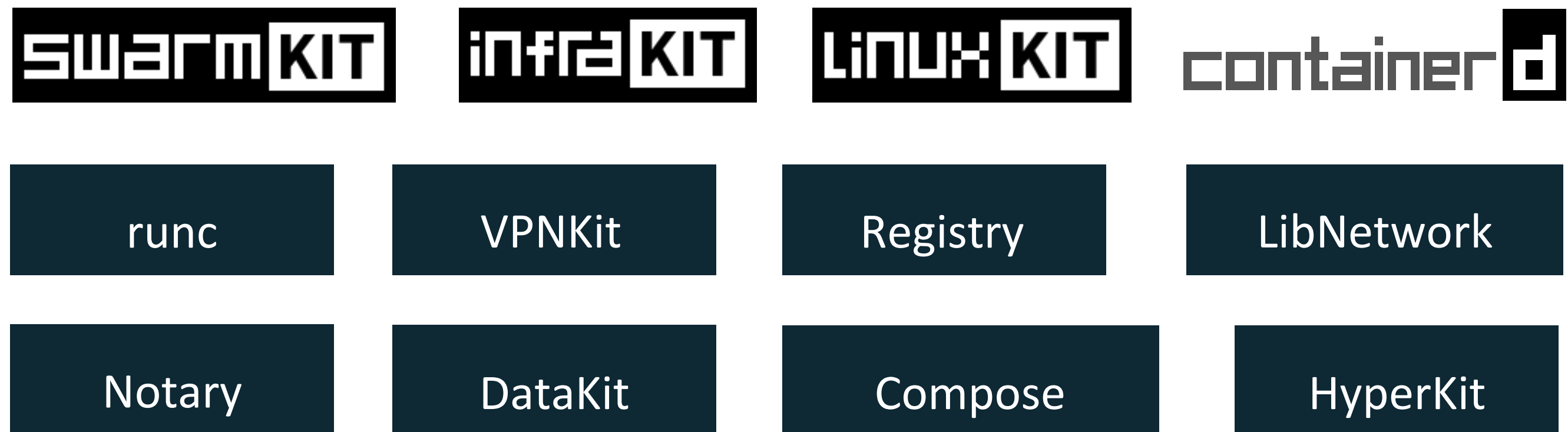
Industry-standard container runtime

containerd

# The Docker Innovation Model

9,149 Open Source Contributors	8800 PRs/Year
--------------------------------	---------------

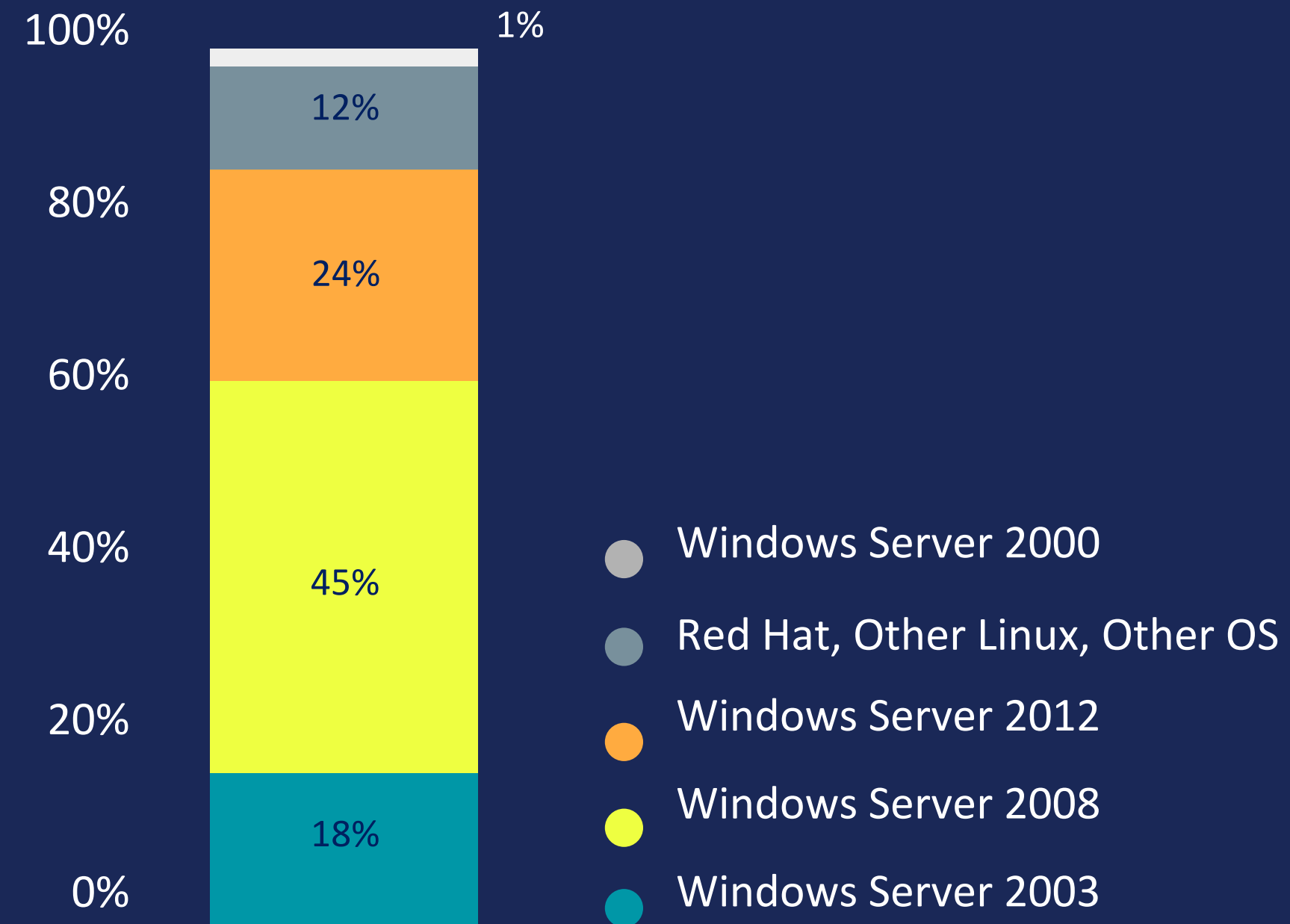




# Modernizing Traditional Applications

# The Innovation Challenge

## Server OS Market Share

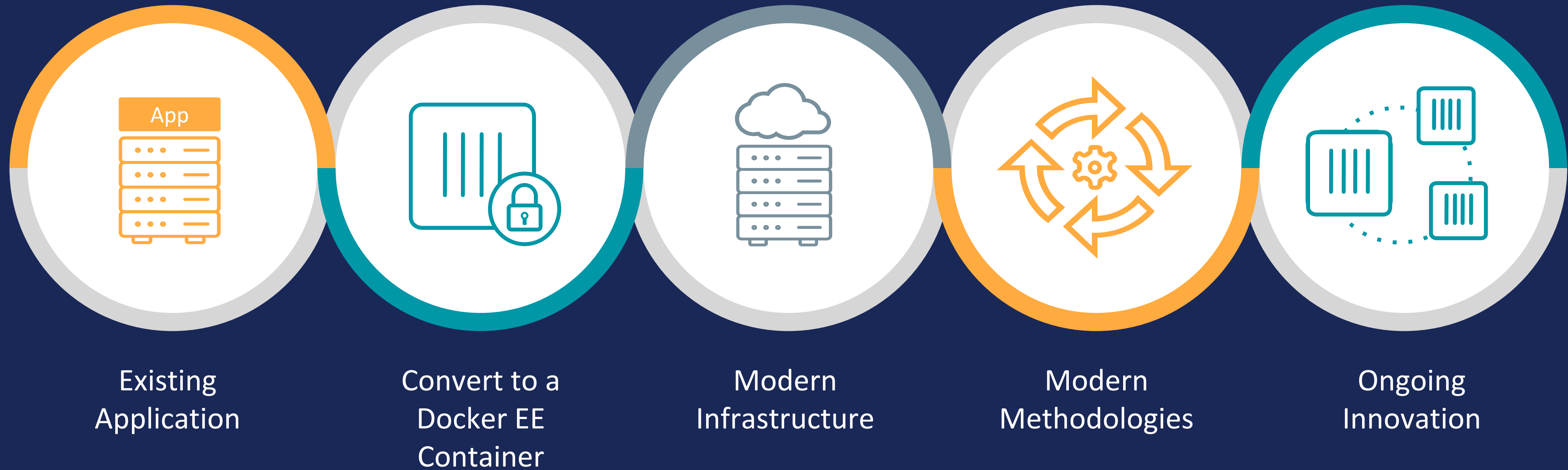


## Average IT Spend By Type

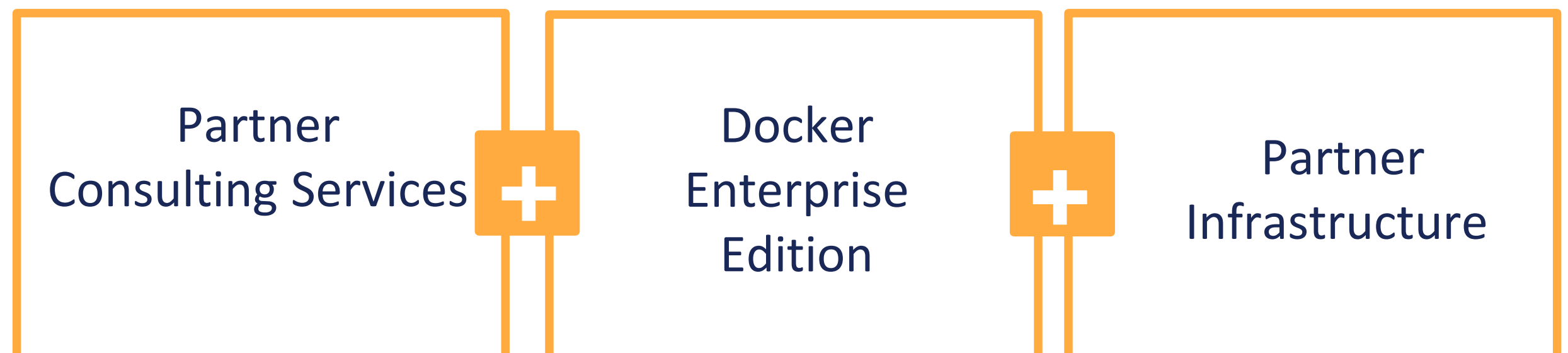
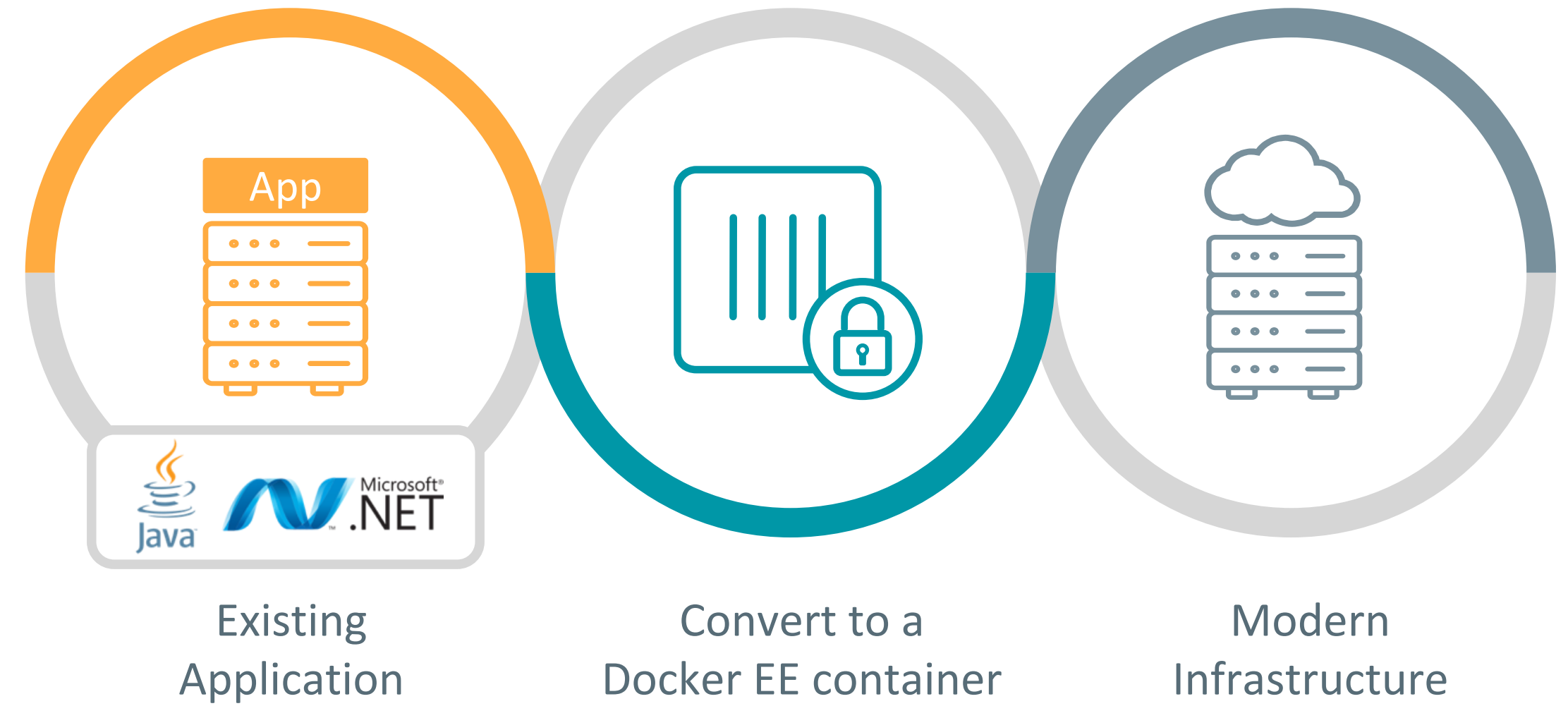




# The Modernization Journey



The Docker Modernize Traditional Apps POC Program



# MTA POC Impact



Portability

Hybrid  
Cloud-Ready



Agility

2x Faster



Security

Isolation & Integrity



Reducing total costs by 50%



## Docker EE and MTA create self funding model for container adoption

### KEY CHALLENGES

- Accumulated thousands of apps, 400+ systems of record and 5 infrastructures over 150 years
- Difficult to innovate with majority of budget spent on maintenance

### SOLUTION

- Leverage Docker MTA program to modernize the email opt-out app with Docker EE to drive down total costs

### RESULTS

- Modernization of single app completed in 1 day
- Applying model to other apps built with same technology
- Business case forecasts a 66% cost reduction

**593**  
Applications

**-70%**  
VMs

+

**-67%**  
Cores

+

**10x**  
Average CPU  
utilization

=

**-66%**  
Total Cost of  
Ownership

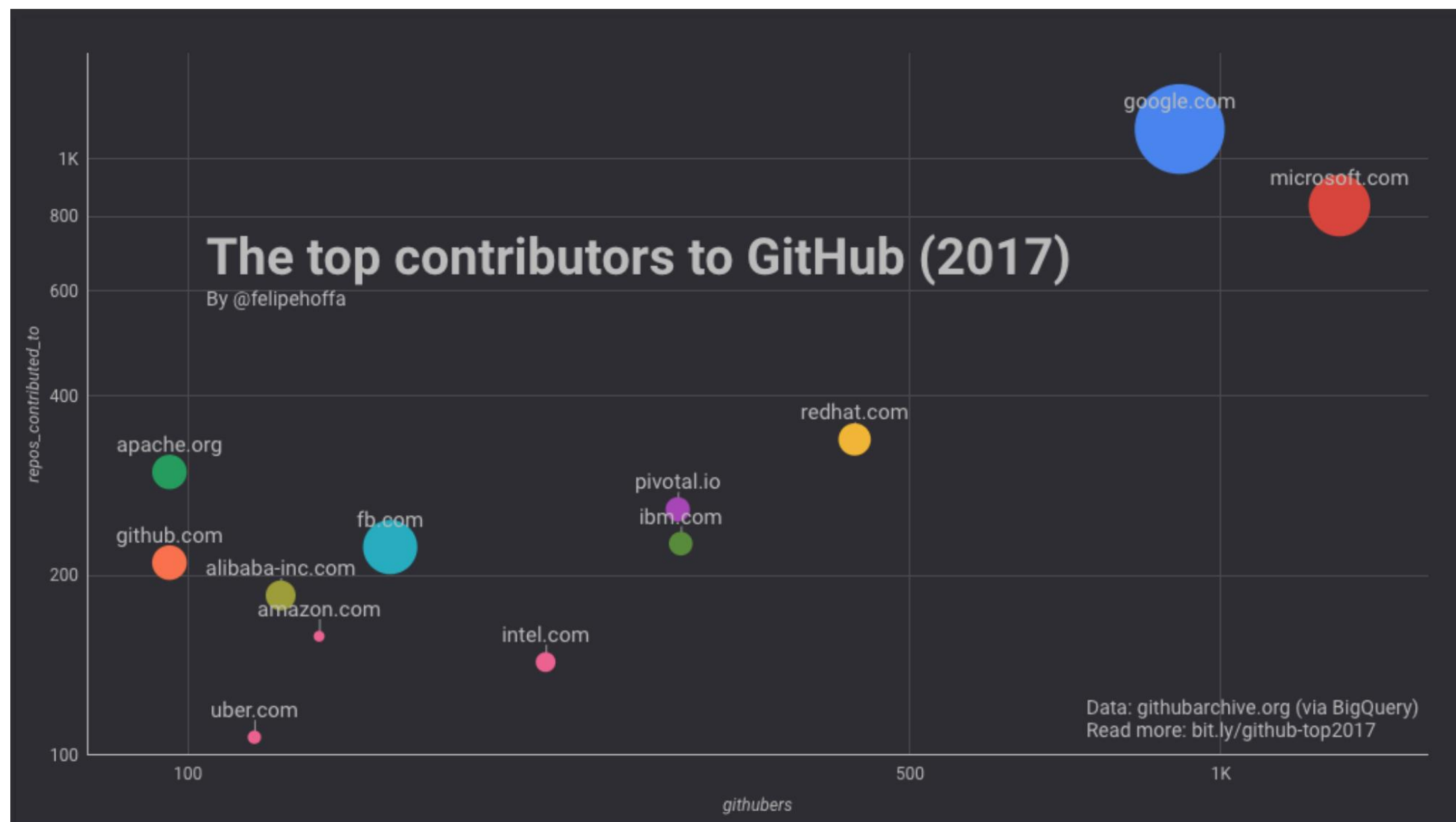
# Docker and Microsoft

# Microsoft is an Open Source champion



Felipe Hoffa  
Developer Advocate @Google. Originally from Chile, now in San Francisco and around the world.  
Oct 24, 2017 · 6 min read

Who contributed the most to open source in 2017? Let's analyze GitHub's data and find out.



Row	domain	githubers	repos_contributed_to	top.repo_name	top.stars	top.githubers_from_domain	sum_stars_projects_contributed_to
1	microsoft.com	1303	832	Microsoft/vscode	16356	18	263525
				electron/electron	13335	5	
				nodejs/node	12117	2	
				Microsoft/TypeScript	10005	17	
				docker/docker	9332	2	
				Microsoft/reactxp	5705	3	
				Microsoft/napajs	5429	3	
				Microsoft/CNTK	4116	51	
				DefinitelyTyped/DefinitelyTyped	3682	15	
isocpp/CppCoreGuidelines	2974	3					
2	google.com	911	1116	tensorflow/tensorflow	35318	10	538687
				tensorflow/models	12852	10	
				angular/angular	10906	4	
				google/guetzli	10679	5	
				googlesamples/android-architecture	9024	3	
				kubernetes/kubernetes	9001	24	
				google/protobuf	7293	5	
				google/guava	6535	2	
				fastlane/fastlane	5899	4	
				deepmind/sonnet	5746	2	
8	amazon.com	134	158	aws/aws-iam-cli	1630	3	27590
				aws/aws-cli	1151	3	
				awslabs/aws-sam-local	996	2	
				aws/aws-lambda-python	993	4	
				aws/aws-lambda-go	951	3	
				aws/aws-lambda-dotnet	805	2	
				aws/aws-lambda-java	525	3	
				aws/aws-lambda-nodejs	517	3	
				aws/aws-lambda-perl	515	5	
				aws/aws-lambda-ruby	432	5	
				aws/aws-lambda-gradle	432	5	
				aws/aws-lambda-gradle	432	5	



# Docker & Microsoft: a great Open Source collaboration

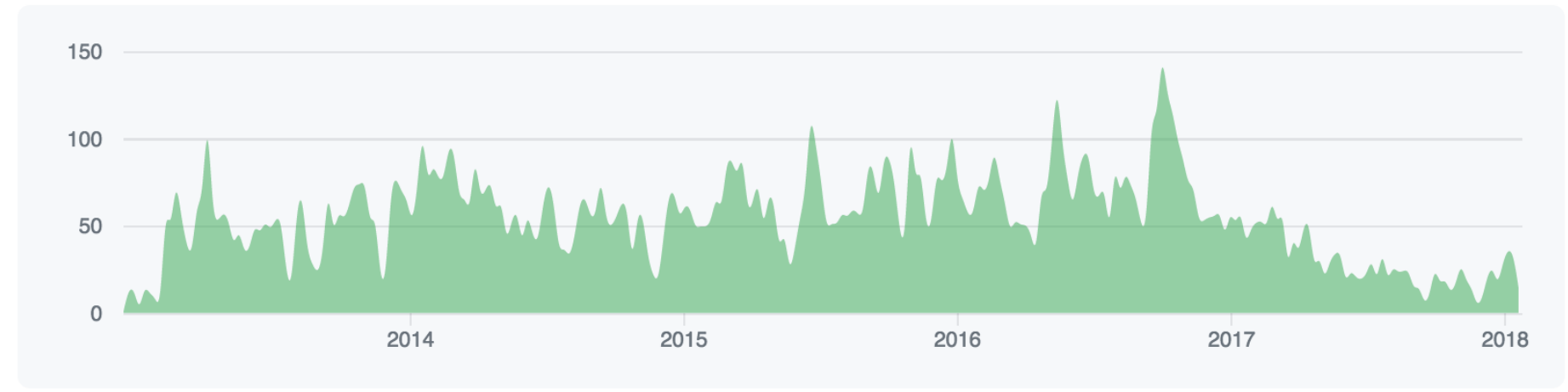
moby / moby Unwatch 3,320 Unstar 47,736 Fork 14,082

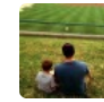
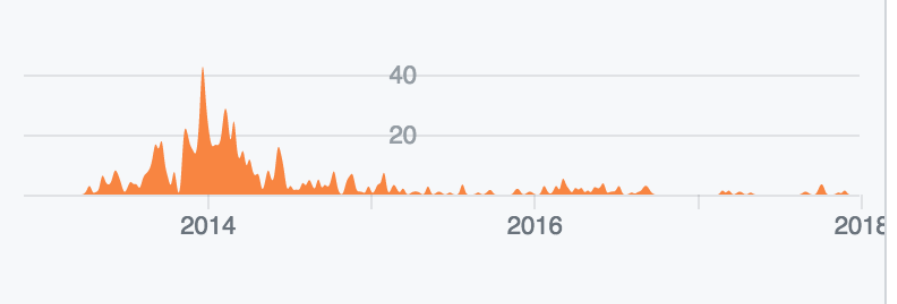

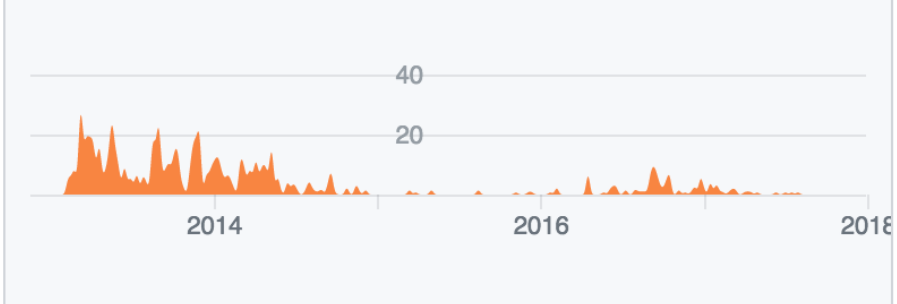
Code Issues 2,933 Pull requests 120 Projects 2 Wiki Insights Settings




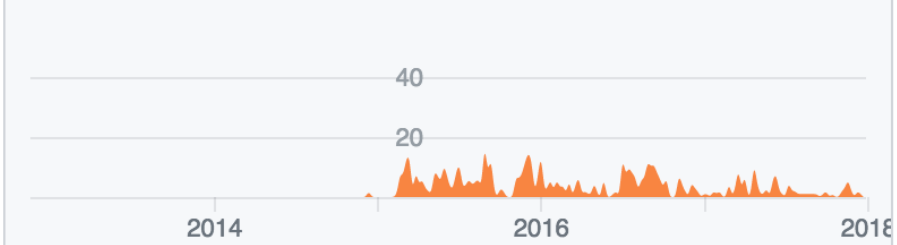
- Pulse
- Contributors**
- Community
- Traffic
- Commits
- Code frequency
- Dependency graph
- Network
- Forks

Jan 13, 2013 – Feb 23, 2018 Contributions: Commits

Contributions to master, excluding merge commits



 <b>crosbymichael</b> #1 913 commits 147,343 ++ 102,905 -- 	 <b>vieux</b> #2 870 commits 48,126 ++ 35,854 -- 
--	---

 <b>creack</b> #3 708 commits 33,475 ++ 21,896 -- 	 <b>jhowardmsft</b> #4 613 commits 212,970 ++ 26,857 -- 
---	--


docker / docker Unwatch 3,149 Unstar 40,334 Fork 12,130

Code Issues 2,261 Pull requests 135 Projects 3 Wiki Pulse Graphs


## Add @jhowardmsft to maintainers #21127

Merged icecrime merged 1 commit into docker:master from icecrime:add\_john\_maintainer on Mar 11, 2016

Conversation 5 Commits 1 Files changed 1 +6 -0

 icecrime commented on Mar 11, 2016 Member +😊

How convenient is it that we can finally all react "👍" on pull requests in a single click, right?



Ping @jhowardmsft :-)

👍 14

- Reviewers
- No reviews
- Assignees
- No one assigned
- Labels
- status/3-docs-review

**Label issues and pull requests for new contributors** [Dismiss](#)

Now, GitHub will help potential first-time contributors discover issues labeled with **help wanted** or **good first issue**

[Go to Labels](#)

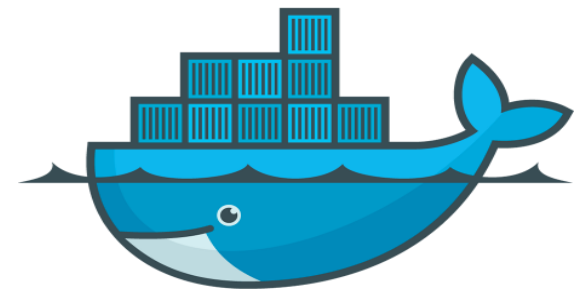
Filters  Labels Milestones [New pull request](#)

Clear current search query, filters, and sorts

<input type="checkbox"/>	<input type="checkbox"/>	8 Open	<input checked="" type="checkbox"/>	634 Closed	Author	Labels	Projects	Milestones	Reviews	Assignee	Sort
<input type="checkbox"/>		<b>Windows: Block pulling uplevel images</b> <input checked="" type="checkbox"/>	<b>status/1-design-review</b>								10
<small>#36327 opened 8 days ago by jhowardmsft</small>											
<input type="checkbox"/>		<b>Don't restore image if layer does not exist</b> <input checked="" type="checkbox"/>	<b>area/images</b>	<b>status/2-code-review</b>							6
<small>#36304 by jhowardmsft was merged 8 days ago • Approved</small>											
<input type="checkbox"/>		<b>Remove interim env var LCOW_API_PLATFORM_IF_OMITTED</b> <input checked="" type="checkbox"/>	<b>platform/windows</b>	<b>status/2-code-review</b>							2
<small>#36269 by jhowardmsft was merged 10 days ago • Approved</small>											
<input type="checkbox"/>		<b>Windows: Bump to final RS3 build number</b> <input checked="" type="checkbox"/>	<b>status/2-code-review</b>								3
<small>#36268 by jhowardmsft was merged 11 days ago • Approved</small>											
<input type="checkbox"/>		<b>Windows: Remove servicing mode</b> <input checked="" type="checkbox"/>	<b>status/2-code-review</b>								
<small>#36267 opened 14 days ago by jhowardmsft</small>											
<input type="checkbox"/>		<b>LCOW: Graphdriver fix deadlock in hotRemoveVHDs</b> <input checked="" type="checkbox"/>	<b>platform/windows</b>	<b>status/4-merge</b>							15
<small>#36114 by jhowardmsft was merged 25 days ago • Approved</small>											







Docker for Windows

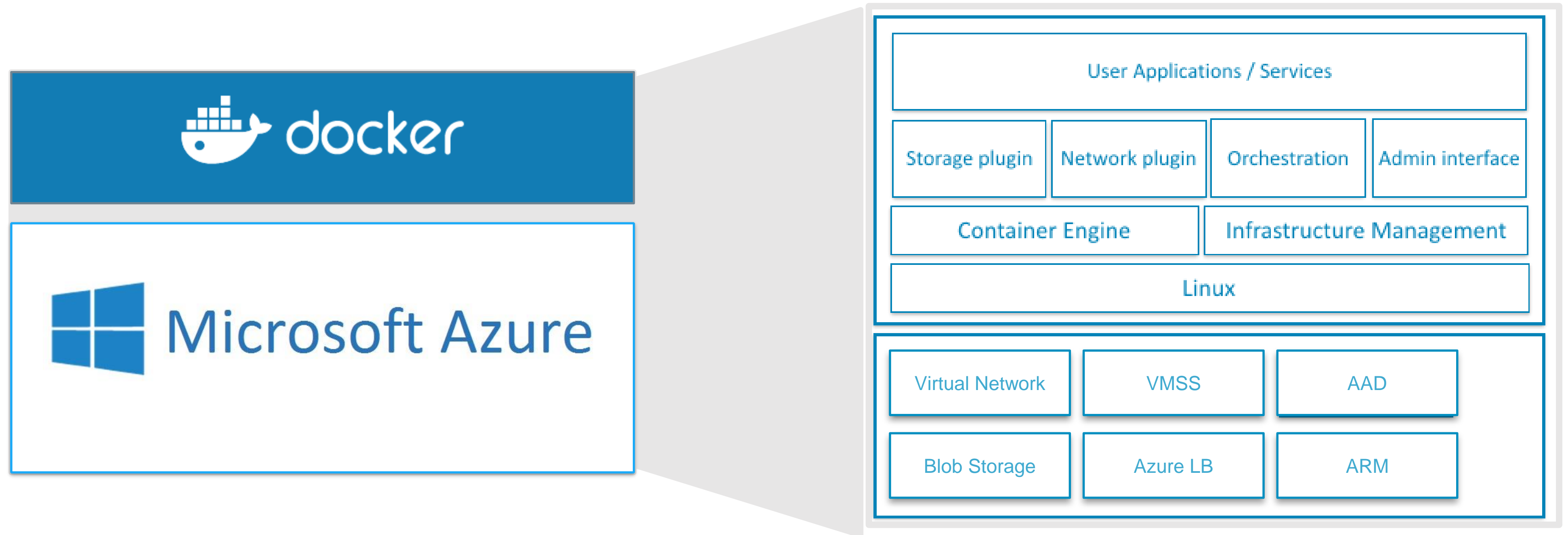


Microsoft Azure

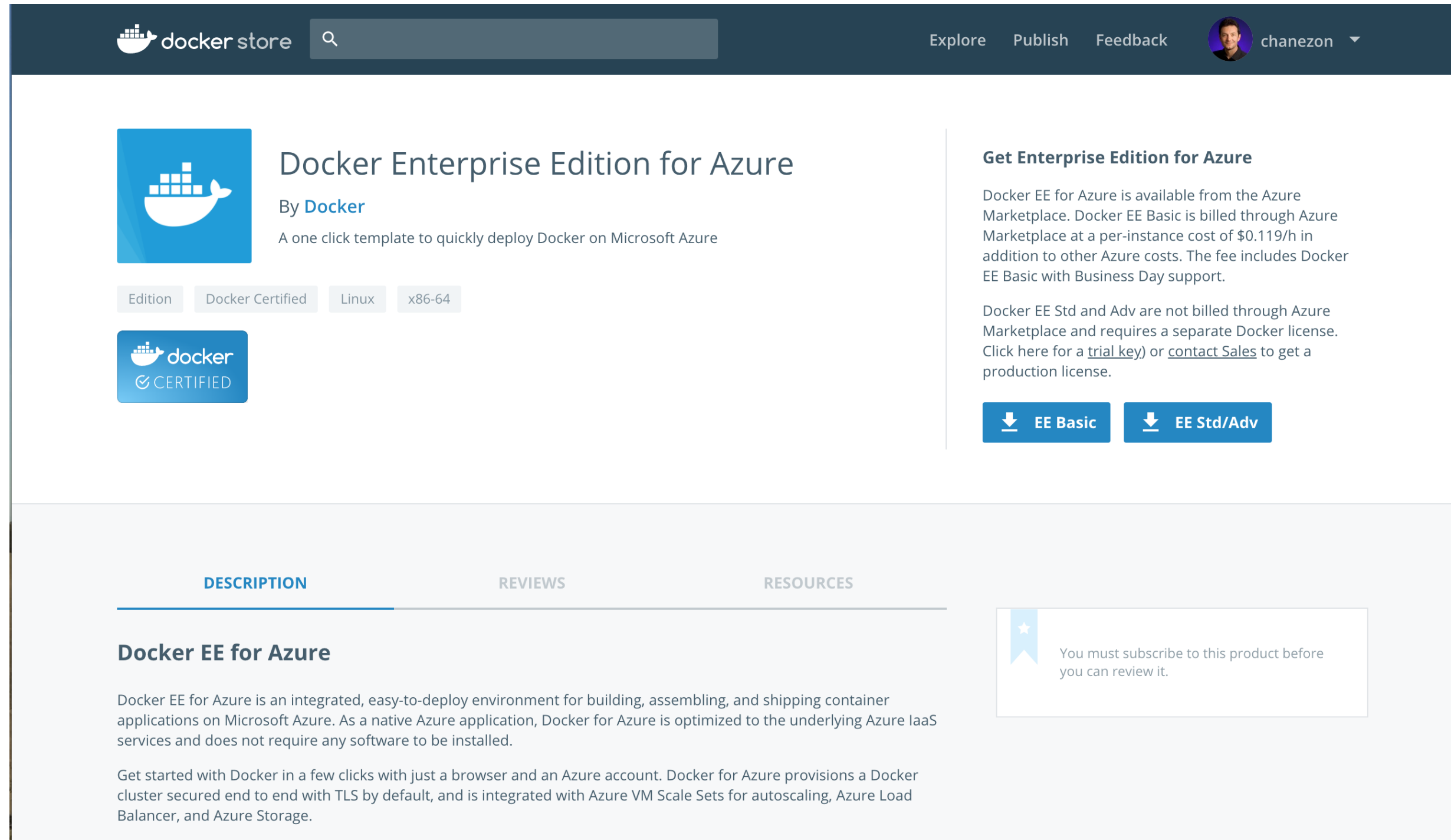
Docker for Azure

# Docker for Azure

Making things simple for a great user experience



# Docker EE on Azure



The screenshot shows the Docker Store product page for Docker Enterprise Edition for Azure. The header includes the Docker Store logo, a search bar, and navigation links for Explore, Publish, Feedback, and a user profile for 'chanezon'. The main content area features the product title 'Docker Enterprise Edition for Azure' by Docker, with a sub-headline 'A one click template to quickly deploy Docker on Microsoft Azure'. Below this are tags for 'Edition', 'Docker Certified', 'Linux', and 'x86-64', and a 'Docker Certified' badge. A 'Get Enterprise Edition for Azure' section provides pricing and licensing details, including a 'GET IT NOW' button. A 'DESCRIPTION' tab is active, showing a detailed overview of the product and its integration with Azure services. A 'REVIEWS' tab is also visible, with a message indicating that a subscription is required to review the product.

**Get Enterprise Edition for Azure**

Docker EE for Azure is available from the Azure Marketplace. Docker EE Basic is billed through Azure Marketplace at a per-instance cost of \$0.119/h in addition to other Azure costs. The fee includes Docker EE Basic with Business Day support.

Docker EE Std and Adv are not billed through Azure Marketplace and requires a separate Docker license. Click here for a [trial key](#) or [contact Sales](#) to get a production license.

[EE Basic](#) [EE Std/Adv](#)

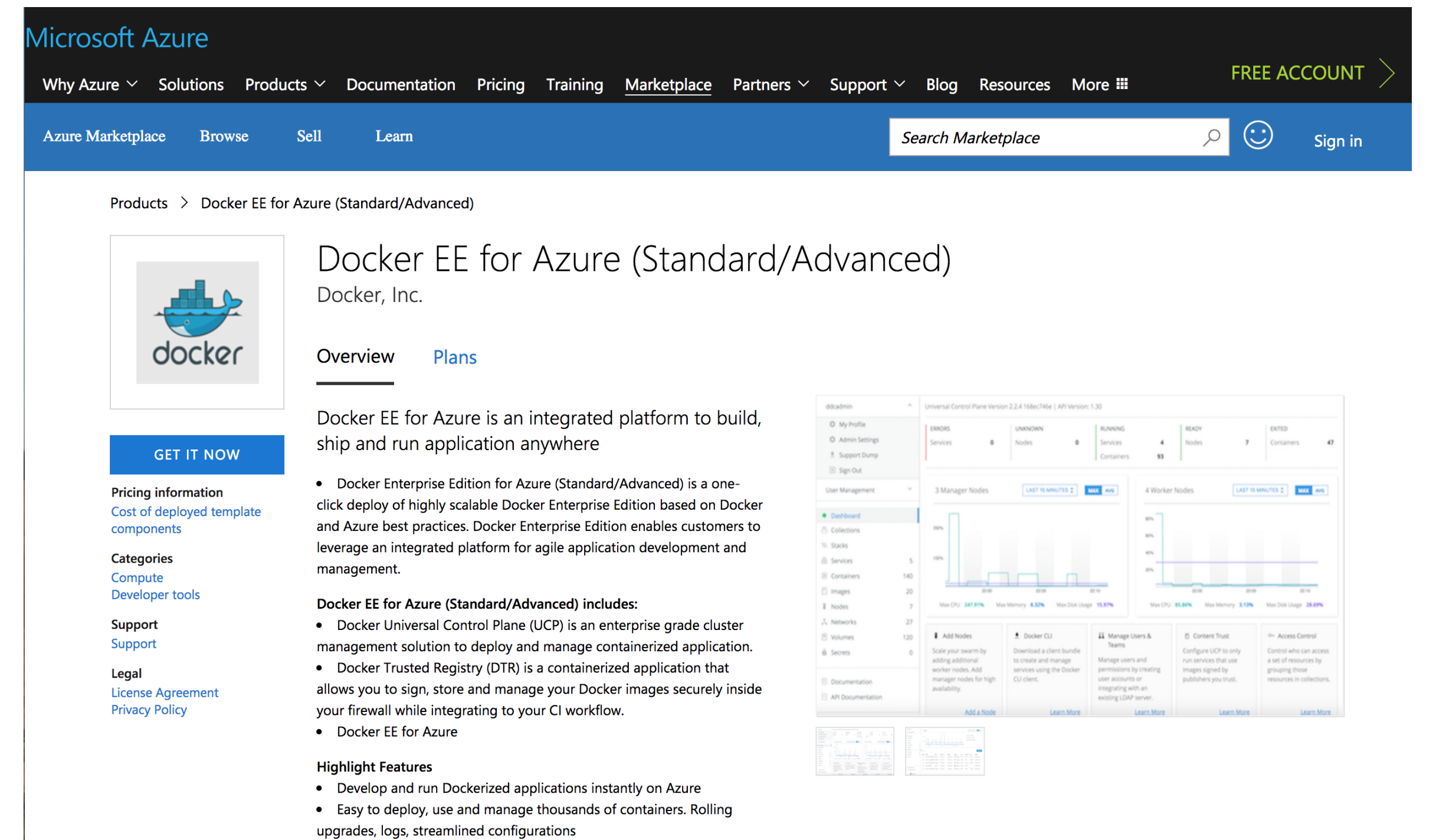
**DESCRIPTION**      REVIEWS      RESOURCES

## Docker EE for Azure

Docker EE for Azure is an integrated, easy-to-deploy environment for building, assembling, and shipping container applications on Microsoft Azure. As a native Azure application, Docker for Azure is optimized to the underlying Azure IaaS services and does not require any software to be installed.

Get started with Docker in a few clicks with just a browser and an Azure account. Docker for Azure provisions a Docker cluster secured end to end with TLS by default, and is integrated with Azure VM Scale Sets for autoscaling, Azure Load Balancer, and Azure Storage.

You must subscribe to this product before you can review it.



The screenshot shows the Microsoft Azure Marketplace product page for Docker EE for Azure (Standard/Advanced). The header includes the Microsoft Azure logo, navigation links for Why Azure, Solutions, Products, Documentation, Pricing, Training, Marketplace, Partners, Support, Blog, Resources, and More, and a 'FREE ACCOUNT' button. The main content area features the product title 'Docker EE for Azure (Standard/Advanced)' by Docker, Inc., with a 'GET IT NOW' button. A 'DESCRIPTION' tab is active, showing a detailed overview of the product and its integration with Azure services. A 'REVIEWS' tab is also visible, with a message indicating that a subscription is required to review the product.

**Microsoft Azure**

Why Azure   Solutions   Products   Documentation   Pricing   Training   Marketplace   Partners   Support   Blog   Resources   More   [FREE ACCOUNT](#)

Azure Marketplace   Browse   Sell   Learn      [Sign in](#)

Products > Docker EE for Azure (Standard/Advanced)

## Docker EE for Azure (Standard/Advanced)

Docker, Inc.

[Overview](#)   [Plans](#)

Docker EE for Azure is an integrated platform to build, ship and run application anywhere

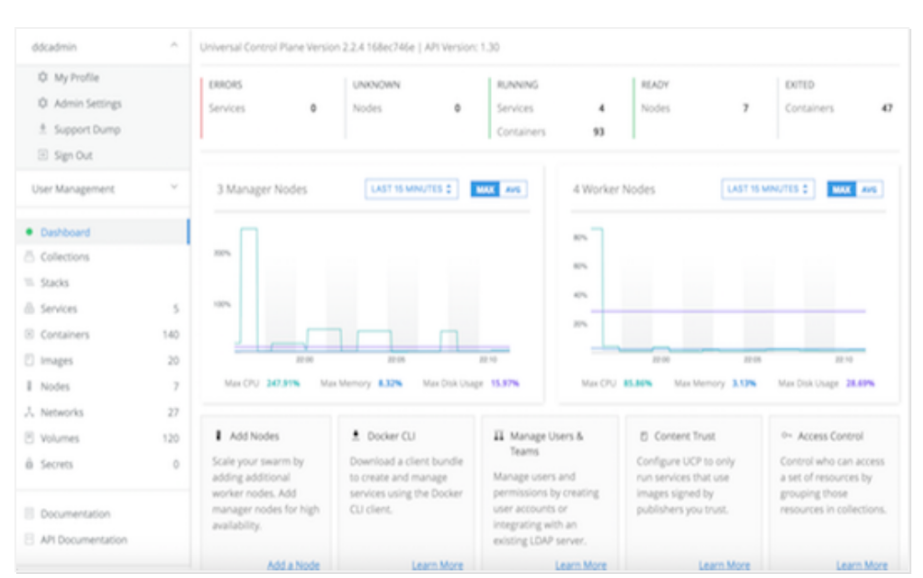
- Docker Enterprise Edition for Azure (Standard/Advanced) is a one-click deploy of highly scalable Docker Enterprise Edition based on Docker and Azure best practices. Docker Enterprise Edition enables customers to leverage an integrated platform for agile application development and management.

**Docker EE for Azure (Standard/Advanced) includes:**

- Docker Universal Control Plane (UCP) is an enterprise grade cluster management solution to deploy and manage containerized application.
- Docker Trusted Registry (DTR) is a containerized application that allows you to sign, store and manage your Docker images securely inside your firewall while integrating to your CI workflow.
- Docker EE for Azure

**Highlight Features**

- Develop and run Dockerized applications instantly on Azure
- Easy to deploy, use and manage thousands of containers. Rolling upgrades, logs, streamlined configurations



The screenshot shows the Docker Universal Control Plane (UCP) dashboard. The dashboard displays various metrics and status indicators for the cluster, including '3 Manager Nodes' and '4 Worker Nodes'. It also shows resource usage graphs for CPU, Memory, and Disk Usage. The dashboard includes sections for 'Add Nodes', 'Docker CLI', 'Manage Users & Teams', 'Content Trust', and 'Access Control'.

Free 30 Days Test Drive from Docker Store



# Docker & Microsoft: collaboration on all fronts

- Build
  - Docker for Windows
  - Docker EE for Windows Servers
  - Visual Studio Tools for Docker
  - Visual Studio Code Docker extension
- Ship
  - Visual Studio Team Services Docker Integration
  - Azure Container Registry
- Run
  - Docker EE in Azure Marketplace
  - Docker on Azure Stack

# Docker with Windows Server 1709

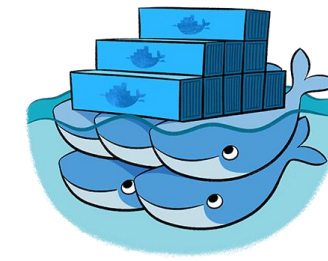
- Docker Linux Containers on Windows
- Docker ingress mode service publishing on Windows
- Named pipes in Windows containers

```
> docker run -d -p 8080:8080 -v  
\\.\pipe\docker_engine: \\.\pipe\docker_engine  
friism/jenkins
```

- Smaller Windows base images: Nanoserver download  
70MB

<https://blog.docker.com/2017/09/docker-windows-server-1709/>

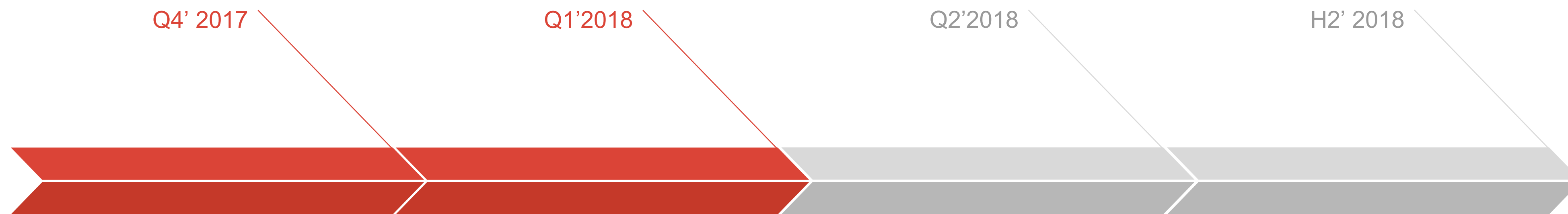
# Swarm Windows Roadmap for Docker EE



Versions	Release Date	Highlights
Docker EE 2.0.0 GA	Q1 2018	<ul style="list-style-type: none"><li>● Only Windows Server 2016 (RS1) Supported<ul style="list-style-type: none"><li>○ Easy Image Compatibility: No</li><li>○ Ingress Networking: No</li></ul></li></ul>
Docker EE 2.0.x Patches	Q2 2018	<ul style="list-style-type: none"><li>● Add Windows Server 1709 (RS3) support with partial features:<ul style="list-style-type: none"><li>○ Easy Image Compatibility: Yes</li><li>○ Ingress Networking: No</li></ul></li></ul>
Docker EE 2.1	Q3 2018	<ul style="list-style-type: none"><li>● Full Support for Windows Server 1709<ul style="list-style-type: none"><li>○ Easy Image Compatibility: Yes</li><li>○ Ingress Networking: Yes</li></ul></li><li>● Tentative Considerations:<ul style="list-style-type: none"><li>○ Windows Server 1803 (RS4) support</li><li>○ Possible new Windows LTSC version in Q3</li></ul></li></ul>



# Kube Windows Known Timelines (Still assessing for EE Roadmap)



## Kube 1.9

Beta support for Windows

- Docker 17.06 engine
- Windows Server 1709

## Kube 1.10

Beta Support for Windows

- Docker 17.06 engine
- Windows Server 1709

## Kube 1.11

GA Support for Windows

- Docker 17.06 engine
- Possibly containerd
- Windows Server 1709 (RS3)
- Windows Server 1803 (RS4)

## Kube 1.x?

GA Support for Windows

- Possibly containerd
- Windows Server LTS release



# Kubernetes in Docker





run it  
AZUR





# Docker: Now Powered by Swarm and Kubernetes

1



The best enterprise container security and management

Docker Enterprise Edition

2



The best container development workflow

Docker Community Edition

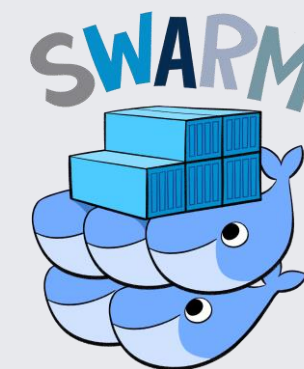
3



Native Kubernetes integration provides full ecosystem compatibility



kubernetes



4



Industry-standard container runtime

containerd

# Docker Community Edition

All in one development for Swarm and Kubernetes

Develop with Docker  
Community Edition on  
your workstation

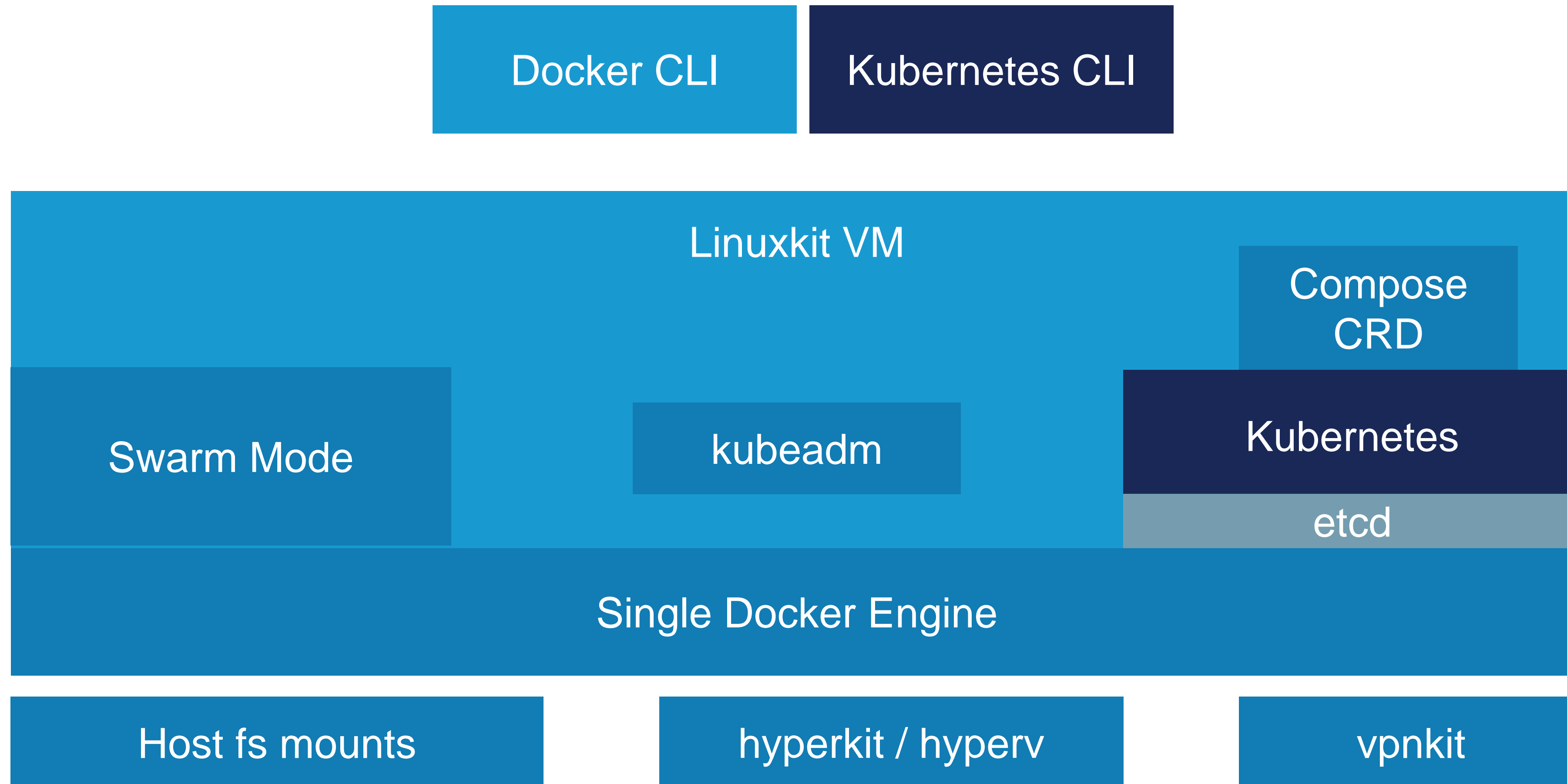
Test locally on Swarm  
and Kubernetes

Deploy to production in  
Swarm

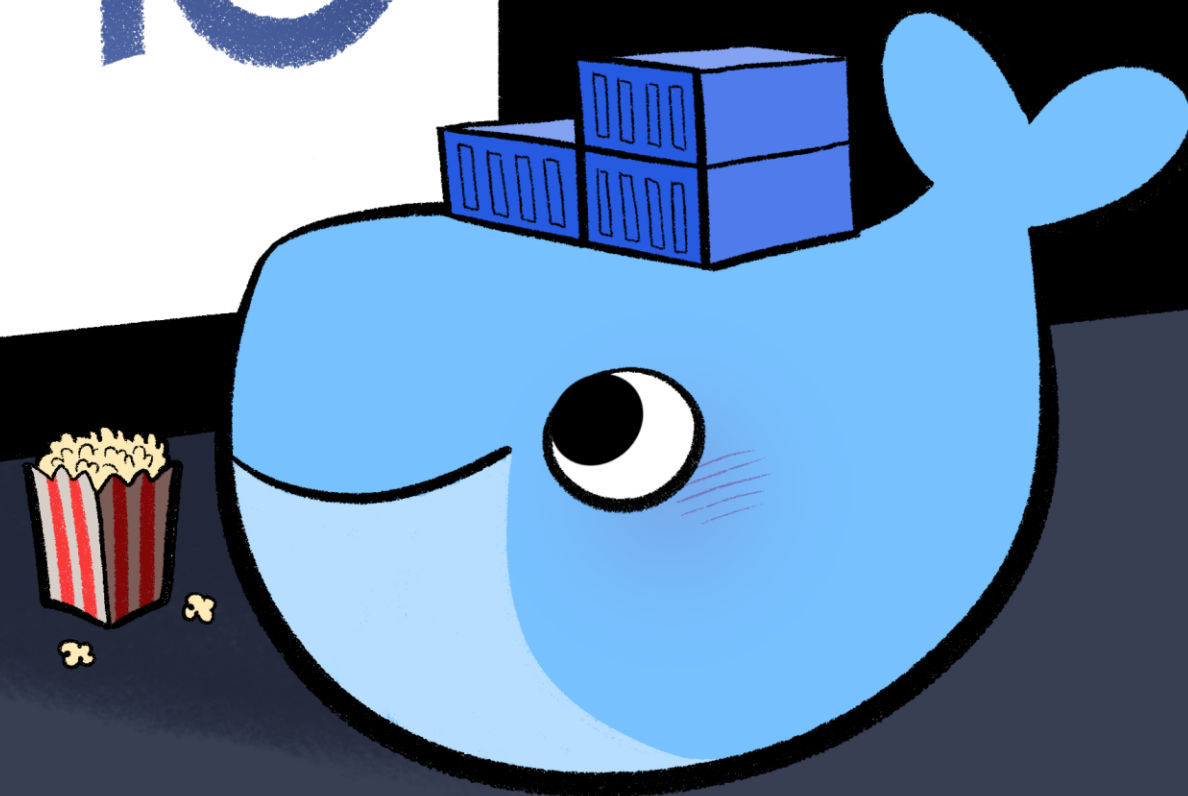
Deploy to production in  
Kubernetes



# Kubernetes in Docker CE (Windows and Mac)



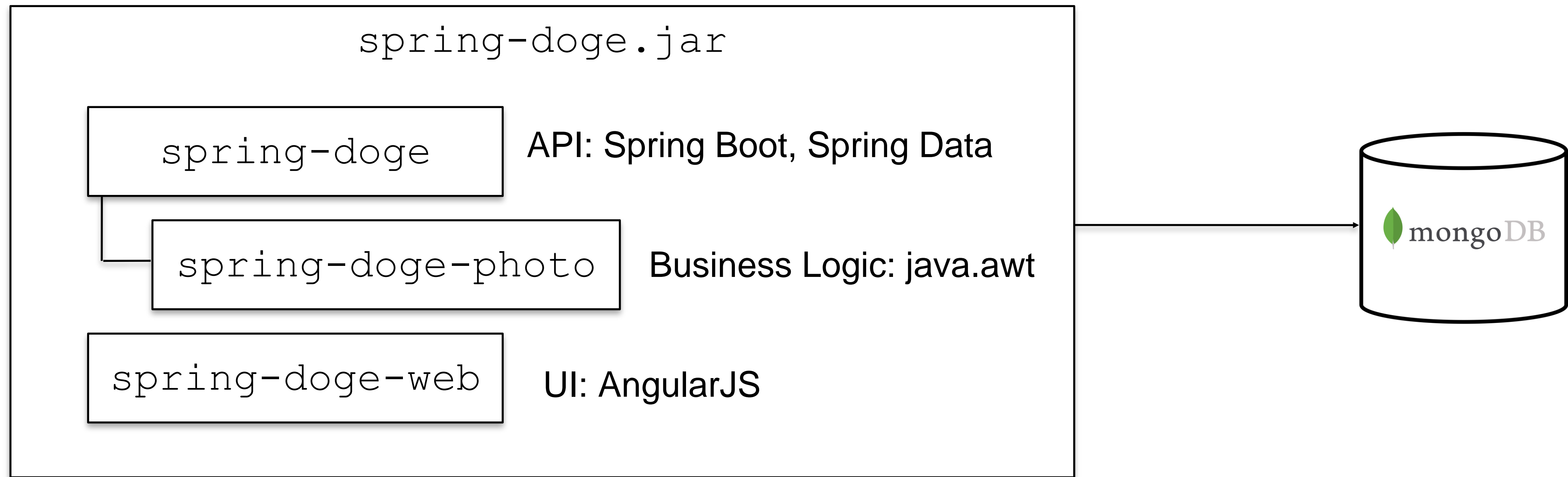
DEMO



Demo: Kubernetes in Docker Desktop



# Example: Spring Boot App using MongoDB



```
java -Dserver.port=8080 \  
-Dspring.data.mongodb.uri=mongodb://mongo:27017/test \  
-jar spring-doge.jar
```

<https://github.com/chanezon/docker-tips/>

# Kubernetes in Docker Desktop

```
pat-2:~ pat$ kubectl get nodes -o wide
```

NAME	STATUS	ROLES	AGE	VERSION	EXTERNAL-IP	OS-IMAGE	KERNEL-VERSION	CONTAINER-RUNTIME
docker-for-desktop	Ready	master	12d	v1.9.2	<none>	Docker for Mac	4.9.75-linuxkit-aufs	docker://18.2.0

**About Docker**

## Docker Community Edition

Version 18.02.0-ce-mac53 (22617)  
Channel: edge  
c3ae48f0d5

Engine: 18.02.0-ce  
Compose: 1.19.0  
Machine: 0.13.0  
Notary: 0.4.3  
Credential Helper: 0.6.0  
Kubernetes: v1.9.2

[Release Notes](#) [Acknowledgements](#) [License Agreement](#)

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Docker and the Docker logo are trademarks of Docker Inc. registered in the U.S. and other countries.

### Kubernetes

General File Sharing Disk Advanced Proxies Daemon **Kubernetes** Reset

- Enable Kubernetes  
Start a Kubernetes single-node cluster when starting Docker and set Kubernetes as Docker orchestrator.
- Show system containers (advanced)  
Show Kubernetes internal containers when using Docker commands.

[Apply](#)

● Docker is running ● Kubernetes is running

## Docker EE now includes Kubernetes

### Docker Enterprise Edition

Private Image Registry

Image Security Scanning

Content Trust and Verification

Secure Access and User Management

App and Cluster Management

Policy Management

Production Ready Windows and IBM P/Z Support

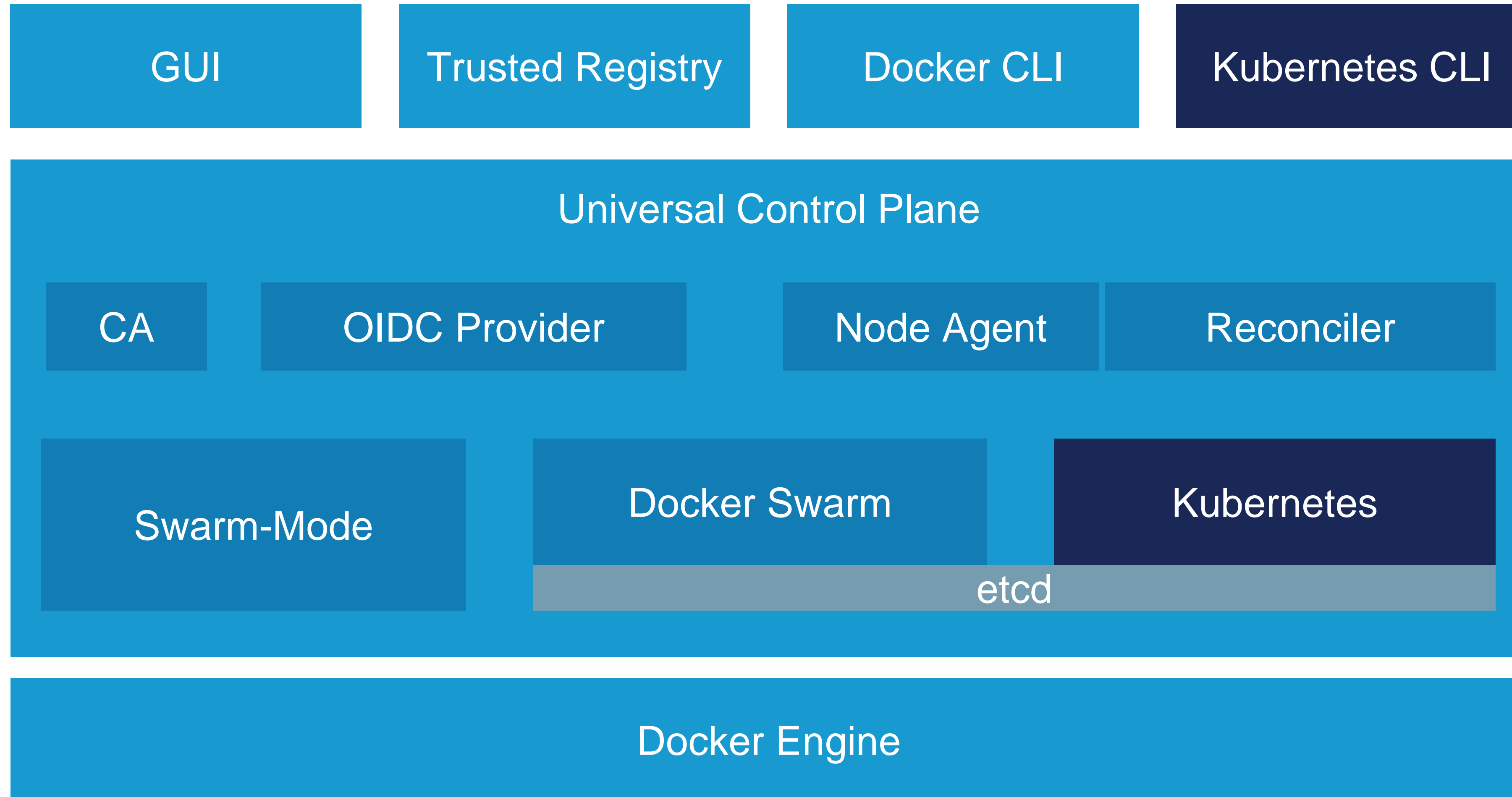
Pods, batch jobs, blue-green deployments, horizontal pod auto-scaling

Docker Swarm

Swarm-Mode

Kubernetes

# Kubernetes in Docker EE



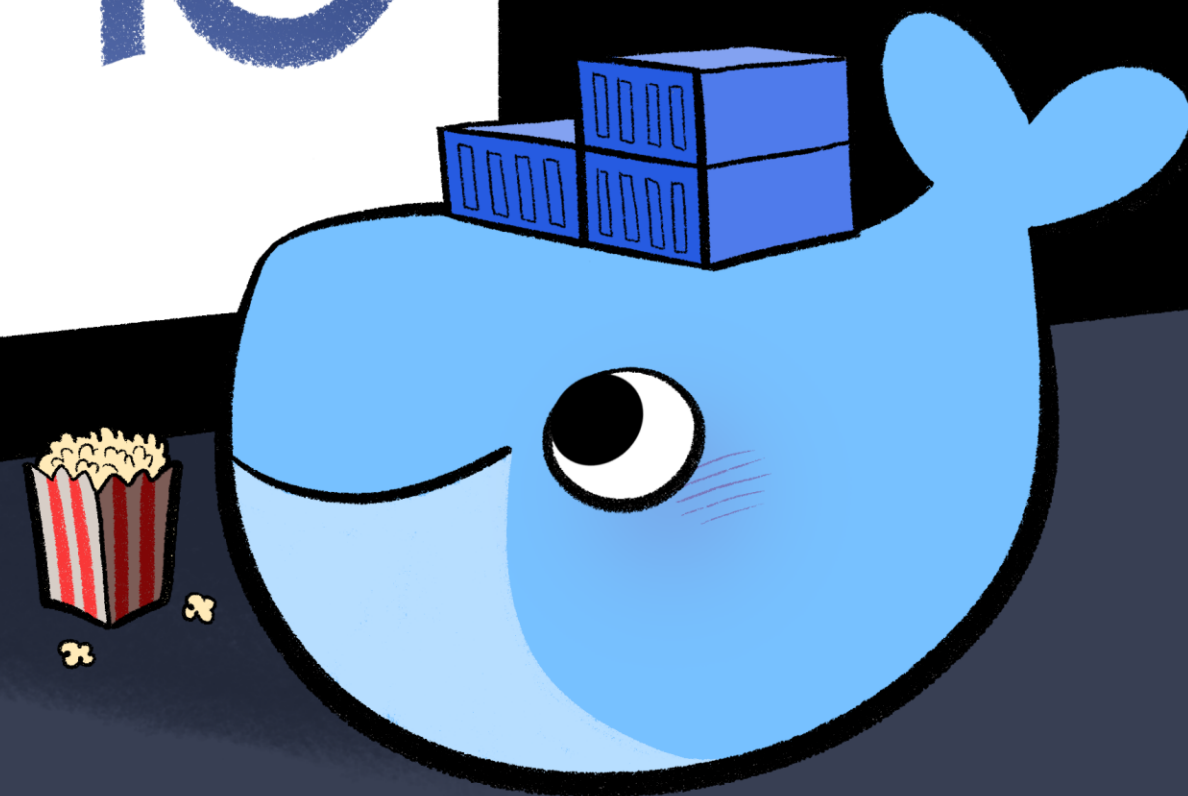
# Docker Enterprise Edition

## Management for Swarm and Kubernetes

Features		Swarm Support	Kubernetes Support
100% Interoperability	<ul style="list-style-type: none"><li>- Clean upstream integration</li><li>- Full ecosystem compatibility</li></ul>	✓	✓
Secure Cluster Lifecycle	<ul style="list-style-type: none"><li>- Easy High Availability provisioning</li><li>- Cryptographic node identity</li></ul>	✓	✓
Secure Supply Chain	<ul style="list-style-type: none"><li>- Registry</li><li>- Content Trust</li><li>- Secure Scanning</li></ul>	✓	✓
Secure Multi-tenancy	<ul style="list-style-type: none"><li>- Role Based Access Control</li><li>- Authorization, Authentication</li><li>- Node Segmentation</li></ul>	✓	✓
Management Dashboard		✓	✓
Supported and Certified on Windows Server and Major Linux Distributions		✓	✓



DEMO



Demo: Kubernetes in Docker EE 2.0



Docker: Now powered by Swarm and Kubernetes

# GENERALLY AVAILABLE

## Q1 2018

Beta signup is open!

[www.docker.com/kubernetes](http://www.docker.com/kubernetes)

Try out EE beta in a browser today

[goto.docker.com/EE-Beta-PWD.html](http://goto.docker.com/EE-Beta-PWD.html)

# Thank You!

 chanezon

@chanezon

# Don't miss Pieter de Bruin session tomorrow 11:25

Thursday, 1 March 2018

08.15 - 09.15	Check-in & Welcome Coffee		
	<b>Track 1 - ITPro MSFT</b>	<b>Track 2 - ITPro OSS</b>	<b>Track 3 - ITPro DevOps</b>
09.15 - 10.00	<u>Microsoft Teams, the Unicorn of my Enterprise</u> Level: 200 Room: Kino 5	<u>Cloud Trends for IT Pros – X-Platform Edition</u> Level: 200 Room: Kino 1	Mob Leve
10.00 - 10.20	Coffee Break & Networking		
10.20 - 11.05	<u>Azure Stack - Your Cloud, Your Datacenter</u> Level: 200-300 Room: Kino 1	<u>Drive innovation with containers</u> Level: 100 Room: Kino 5	Mak gain Leve
11.05 - 11.25	Coffee Break & Networking		
11.25 - 12.10	<u>Transform your data estate on Microsoft data platform</u> Level: 200 Room: Halle 1	<u>Power your move to the Cloud with Docker</u> Level: 200 Room: Kino 5	Dev App Leve
12.10 - 13.30	Lunch & Networking		
13.30 - 14.15	<u>Advanced Security – Be a Step Ahead of your Enemy</u> Level: 200 Room: Kino 5	<u>SQL Server 2017 on Windows, Linux and Docker containers with deep dive on Linux</u> Level: 300 Room: Kino 2	Brin Visu Leve
14.15 - 14.35	Coffee Break & Networking		

## Power your move to the Cloud with Docker



Pieter de Bruin  
Solution Engineer, Docker Inc.

### Session abstract

Docker isn't just for new microservices applications in containers. You can take existing applications and package them to run in Docker, without changing any source code. Packaging apps in Docker is a great way to make the move to the cloud. You can quickly build out your components as a set of images, and run them in containers locally to verify the solution works. Then you can spin up a Docker cluster in the cloud, and deploy your app using the exact same Docker artifacts that you use in dev. In this session I'll demonstrate that process, taking an n-tier .NET application on my laptop and moving it to Azure.

### About the speaker

At Docker Pieter works on technical presales and specifically on the alliance with Microsoft. Previously he worked at Microsoft as cloud solution architect and architect community lead. And before that he worked at Avanade where he was MVP in VSTS, Microsoft's devops solution.



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