



POWERSHELL + DEVOPS  
GLOBAL SUMMIT

# Containers - You Better Get on Board!

Anthony E. Nocentino  
Centino Systems

[aen@centinosystems.com](mailto:aen@centinosystems.com)

@nocentino



# Anthony E. Nocentino

**Consultant and Trainer**

**Founder and President of Centino Systems**

Specialize in system architecture and performance

Microsoft MVP - Data Platform - 2017-2020

Linux Foundation Certified Engineer

Microsoft Certified Professional

email: [aen@centinosystems.com](mailto:aen@centinosystems.com)

Twitter: @nocentino

Blog: [www.centinosystems.com/blog](http://www.centinosystems.com/blog)

Pluralsight Author: [www.pluralsight.com](http://www.pluralsight.com)





Anthony E. Nocentino

@nocentino



Thinking about ditching my decks and going 100% demos for my [#PSHSummit](#) container session. I have SOOOO much content I want to show you all!

4:17 PM - 28 Apr 2019

31 Likes



5



31



- Introducing Containers
- The Container Universe
- Running SQL Server and PowerShell in Containers
- Hands on with Containers
- Container Orchestration

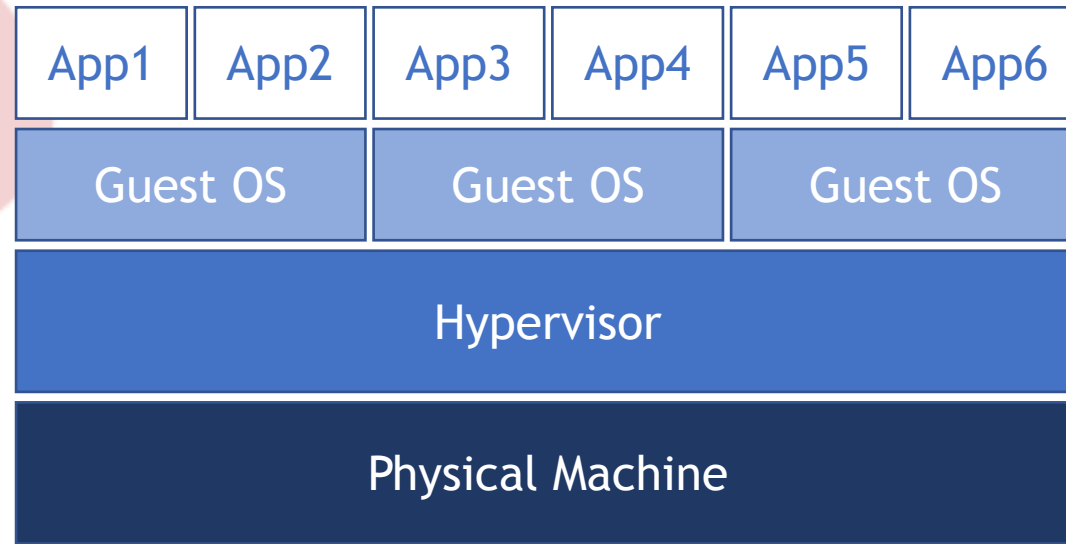


# Introducing Containers

- Operating system virtualization
  - Shared kernel and system resources
- Container...contain...
  - Binaries, libraries and file system
- One app inside the container
  - This is the unit of work
- Containers are ephemeral
- Let's start off with a comparison...

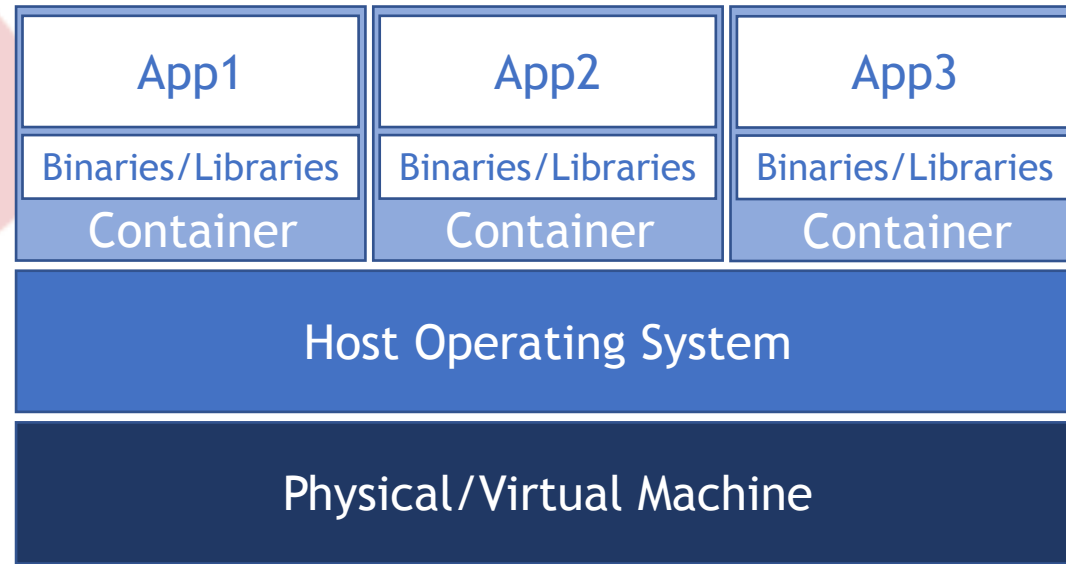


# Virtual Machines

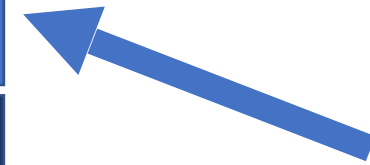


High Maintenance

# Containers

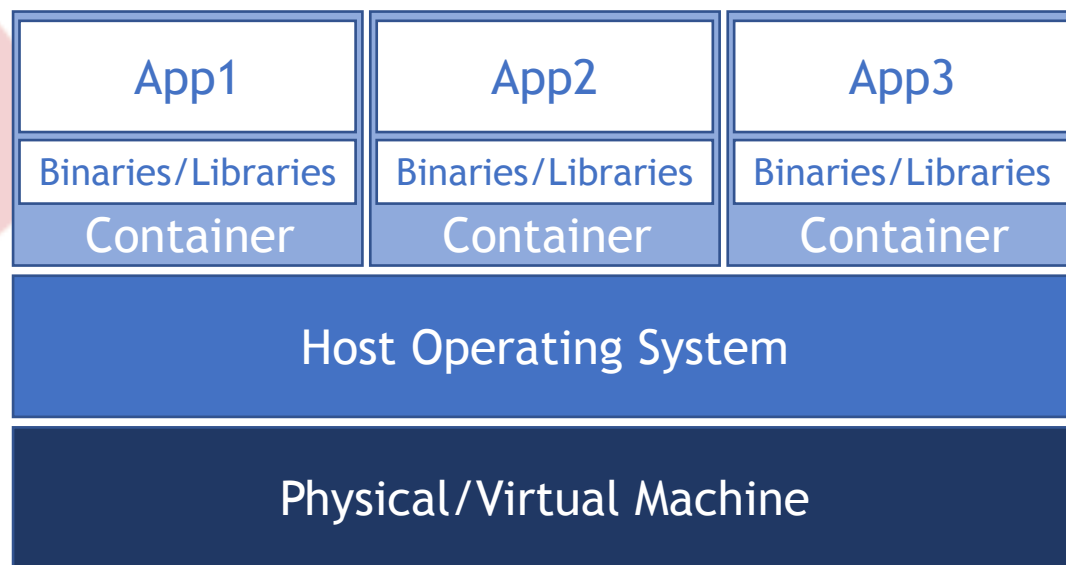
A decorative graphic on the left side of the slide features two interlocking gears, one light blue and one light red. Overlaid on these gears are two large, curved arrows: a red one pointing downwards and to the right, and a blue one pointing upwards and to the right.

Lower Maintenance

A blue arrow points from the text 'Lower Maintenance' towards the 'Host Operating System' layer of the architecture diagram.

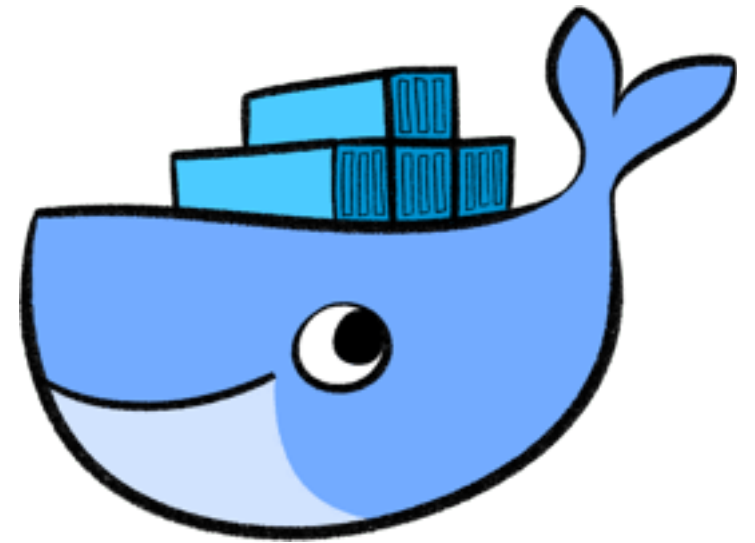
# Containers

Patching/Deployments/Whatever



# The Container Universe

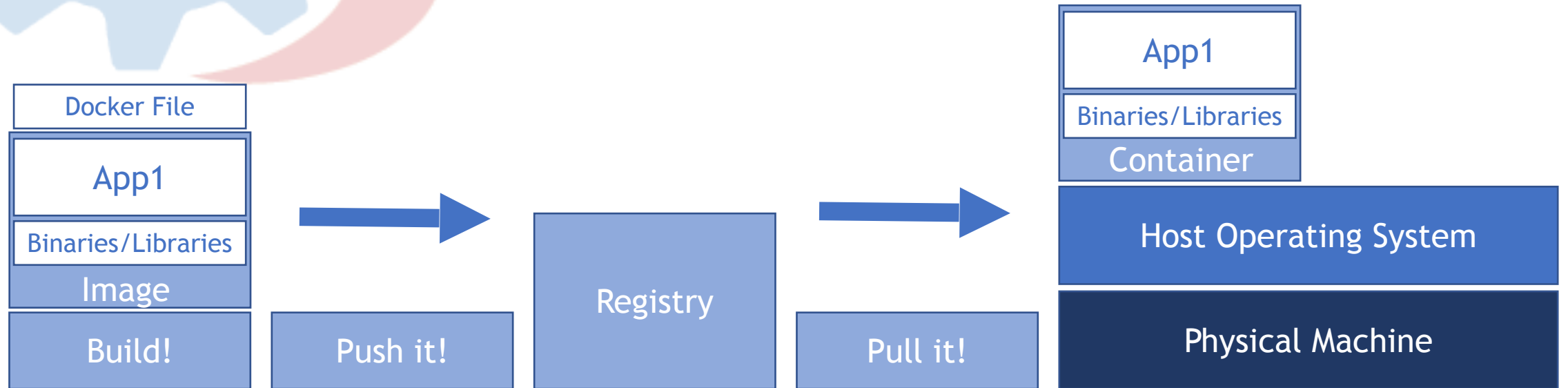
- Docker
  - Linux
  - Windows
  - Mac
- Docker Inc.
- Other Container Engines
  - rkt
  - CoreOS
  - Windows
  - chroot...chwhat?





# Getting Containers

- Images - code, runtimes, libraries, environment variables
- Registries - where images live. Docker Hub, Azure Container Registry, internal
- Docker File - defines the container image



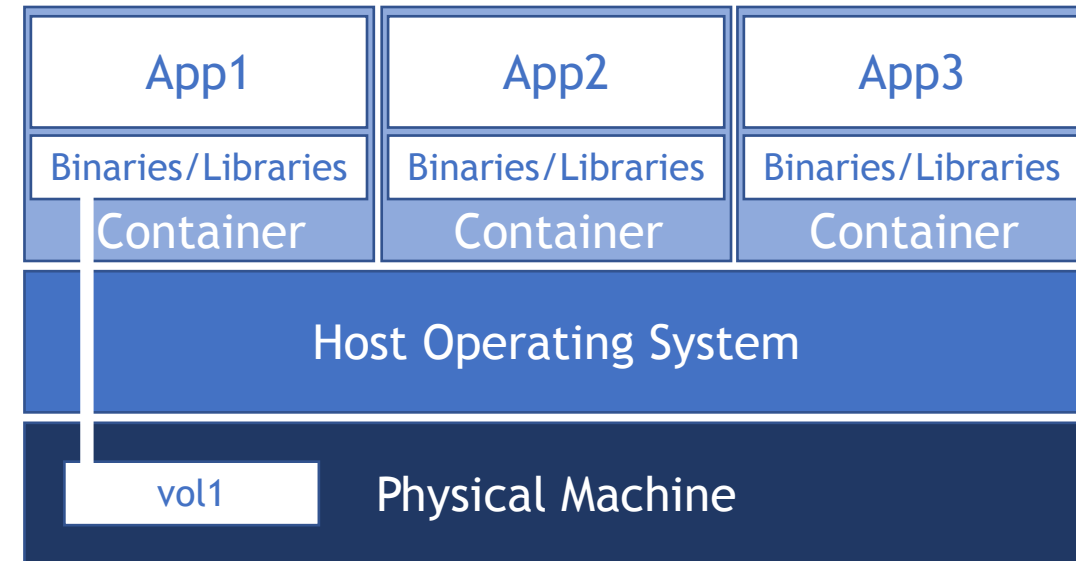


# Data Persistency in Containers

- But containers are ephemeral, what about my data?

# Data Persistency in Containers

- Container Images are read only
- If your container is alive so is your data, don't delete the container
- Docker Data Volumes
  - Docker managed resource
  - Independent of the container
- <https://docs.docker.com/storage/>





# Running PowerShell in Containers

- What's the vision for PowerShell Core?
  - PowerShell everywhere, right?
- What if we run whatever version of PowerShell we wanted...
- Wherever we wanted...
- As a container!
- What if we wanted to run a script in a container and it goes away when finished?
- Sounds like...serverless, right?
- But what about job distribution?
- Testing scenarios...of course
- Development scenarios



# Running SQL Server on Containers

- Why run SQL Server on a Container?
- Same reasons...
  - Deployments, upgrades, patching, speed...agility
- Windows and Linux is available
  - <https://github.com/Microsoft/mssql-docker>
- Non-production on Windows



# Demo!

- Pull an Image
- Run a Container
- Access our application
- Connect to the Container
- Persisting data with a Container
- Pass commands and scripts into Containers
- Build our own “Serverless” FaaS platform

A decorative background on the left side of the slide. It features two interlocking gears, one light blue and one light red, with a circular arrow in red and blue winding around them.

# Container Orchestration

- Workload placement
- Managing state, starting things up and keeping things up
- Load balancing services
- Networking
- Persistent storage
- Declarative model
- Job distribution (PowerShell, or any workload really)
- Secrets and certificate management



# Container Orchestrators

- Docker Swarm
- Kubernetes
- Red Hat OpenShift
- Azure Kubernetes Services (AKS)
- Google Kubernetes Engine (GKE)
- Amazon Elastic Container Service for Kubernetes (EKS)





# Review

- Introducing Containers
- Running SQL Server and PowerShell in Containers
- The Container Universe
- Hands on with Containers
- Container Orchestration



# Need more data?

- **Contact me!**

- **email:** [aen@centinosystems.com](mailto:aen@centinosystems.com)
- **Twitter:** @nocentino

- **Blog**

- [www.centinosystems.com/blog](http://www.centinosystems.com/blog)

- **Pluralsight**

- Understanding and Using Enterprise Linux 7
- Kubernetes Installation and Configuration Fundamentals



# Resources

- Installing Docker
  - <https://docs.docker.com/docker-for-windows/install>
  - <https://docs.docker.com/install/linux/docker-ce/centos>
- Running Docker
  - <https://docs.docker.com/get-started>
  - <https://docs.docker.com/storage>
  - <https://docs.docker.com/engine/security/security>

# THANK YOU!

Please use the event app or Sched.com to submit a session rating!

