

# CONTAINERS - YOU BETTER GET ON BOARD!

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# AGENDA

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

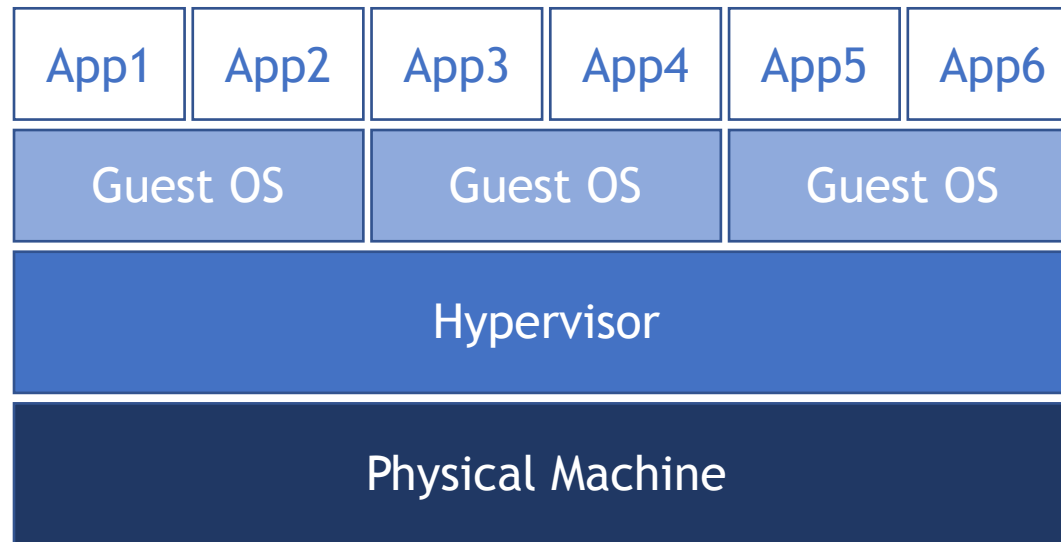


# INTRODUCING CONTAINERS

- 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...



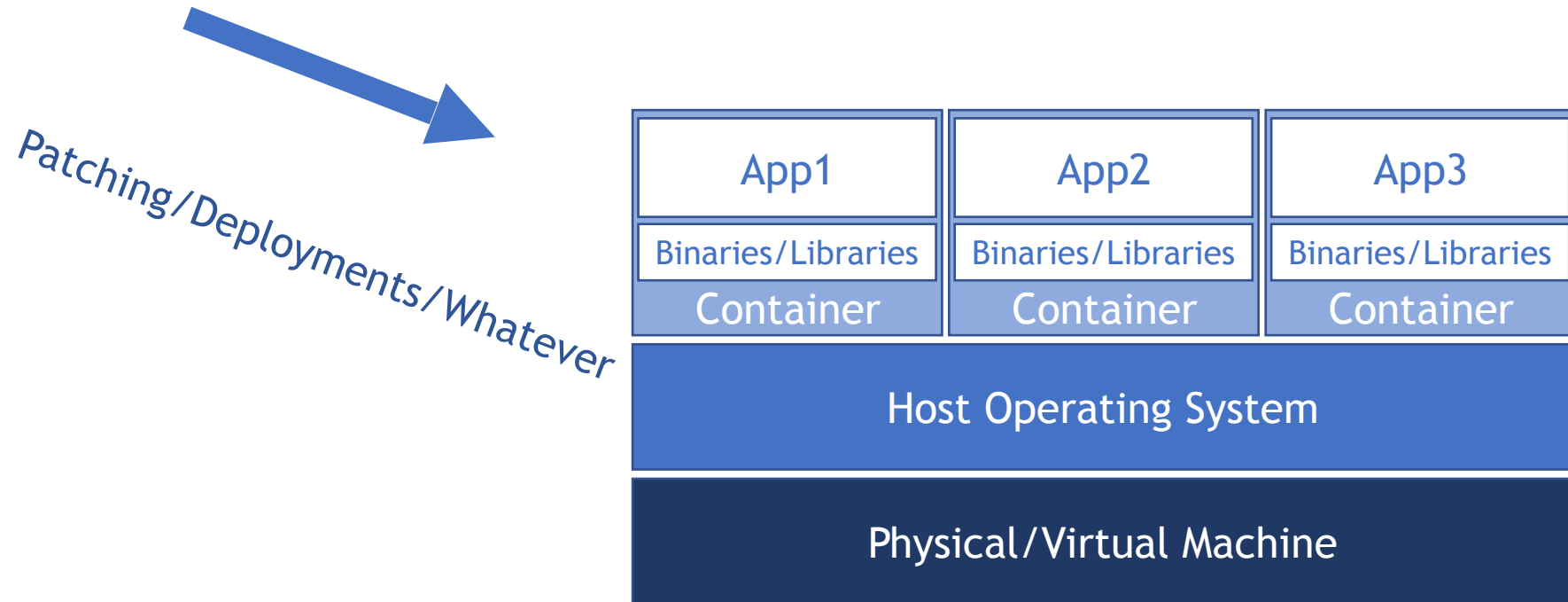
# VIRTUAL MACHINES



High Maintenance

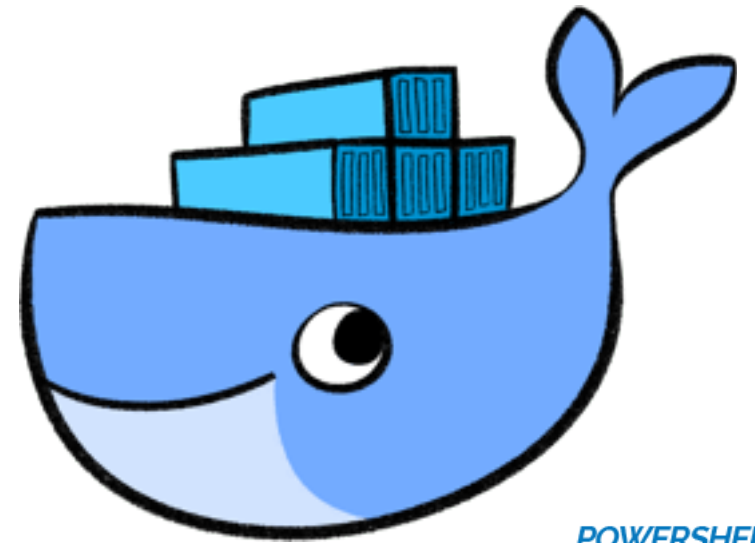


# CONTAINERS



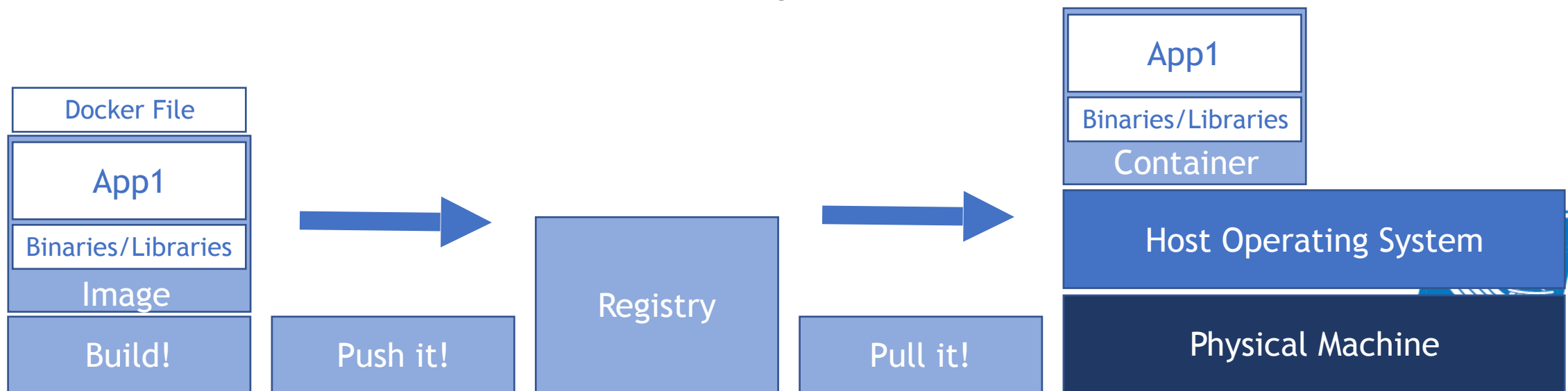
# THE CONTAINER UNIVERSE

- 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





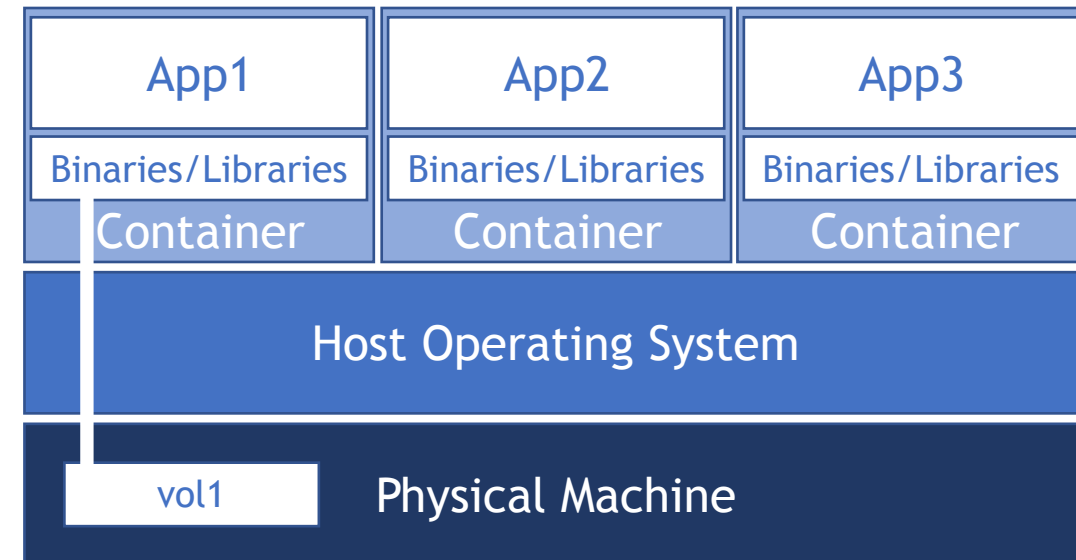
# DATA PERSISTENCY IN CONTAINERS

- 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
- Writable Layer
- 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? Kubernetes?



# 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



# 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!

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- **Twitter:** @nocentino

## ■ Blog

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

## ■ Pluralsight

- Understanding and Using Enterprise Linux 7
- Kubernetes Installation and Configuration Fundamentals
- Managing Kubernetes: The API Server and Pods





# 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>

