

A large room filled with many rows of modern, light-colored chairs, creating a patterned background.

# SQL Server in Containers



# Carlos Lopez

## Senior DBA, ATOS



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### Experience

Microsoft Certified Professional 2012/2014,  
2016-2017

More than 10 years of experience

Multi-platform DBA

### Community

PASS Guatemala SQL Server User Group  
board member

### Fields of Experience

MS SQL Server

Linux Distros

Oracle 10-11g

# Agenda



- Hypervisor vs Containers
- Container Infrastructure
- Utilizando Docker con SQL Server
- Kubernetes K8S con SQL Server
- Demos de Docker y K8S con SQL Server
- Preguntas y Respuestas

# Hypervisor vs Containers



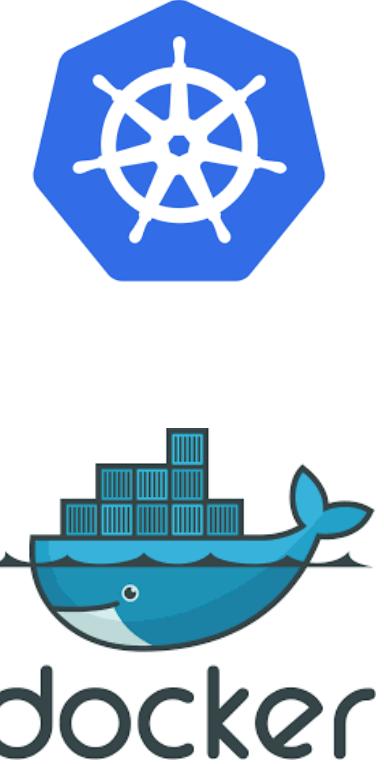
- Hypervisor realiza carga de las librerías de Kernel completas a la maquina virtual.
- Hypervisor realizan carga de código "legacy" de drivers antiguos 64,32,16 bit
- Hypervisor realiza emulaciones de drivers en la pre-carga de bootloaders (VGA, Red, Audio etc)
- Hypervisor toma el control de los recursos VTD inflexiblemente.





# Hypervisor vs Containers

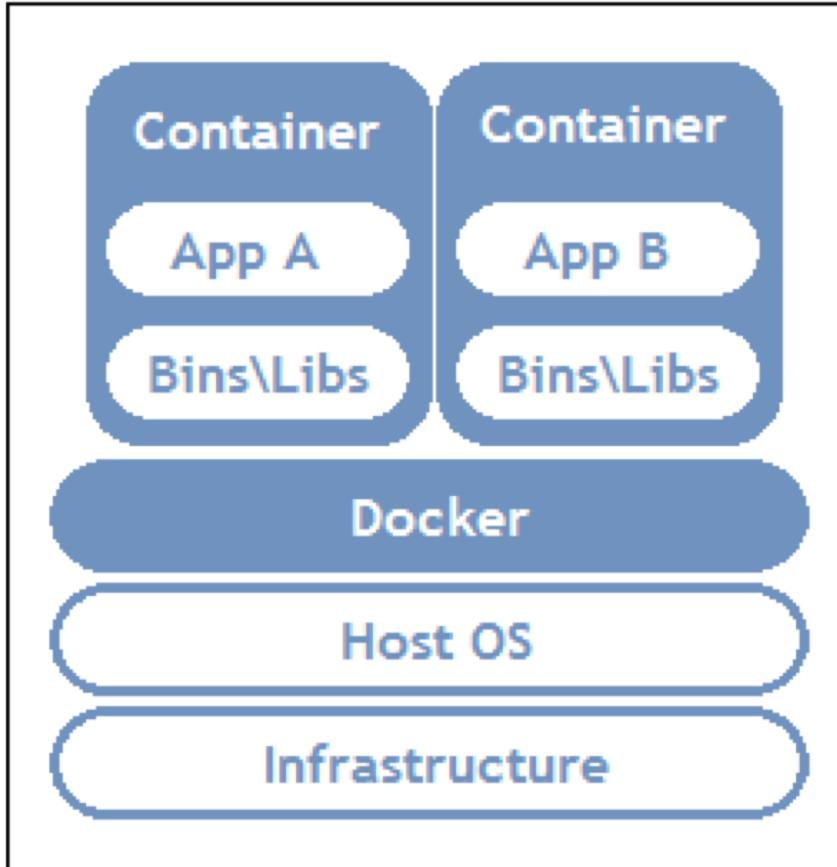
- Los Containers, utilizan una imagen centralizada de hypervisor con modulos escenciales.
- Los Contenedores, utilizan modulos de Kernel pre-compilados utilizando únicamente lo necesario
- Los Contenedores utilizan **Unikernels**
- Los Unikernel, son especializados, dedicados y cargados a través de archivos de configuración para cada contenedor
- La interfaz de Containers son microservicios.



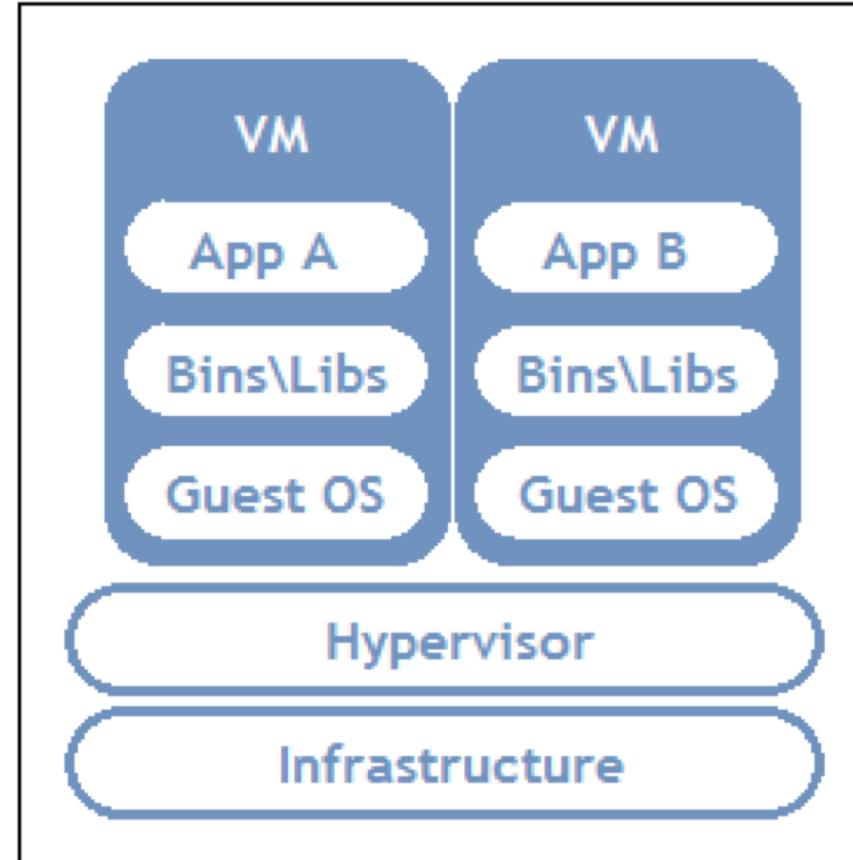
# Hypervisor vs Containers



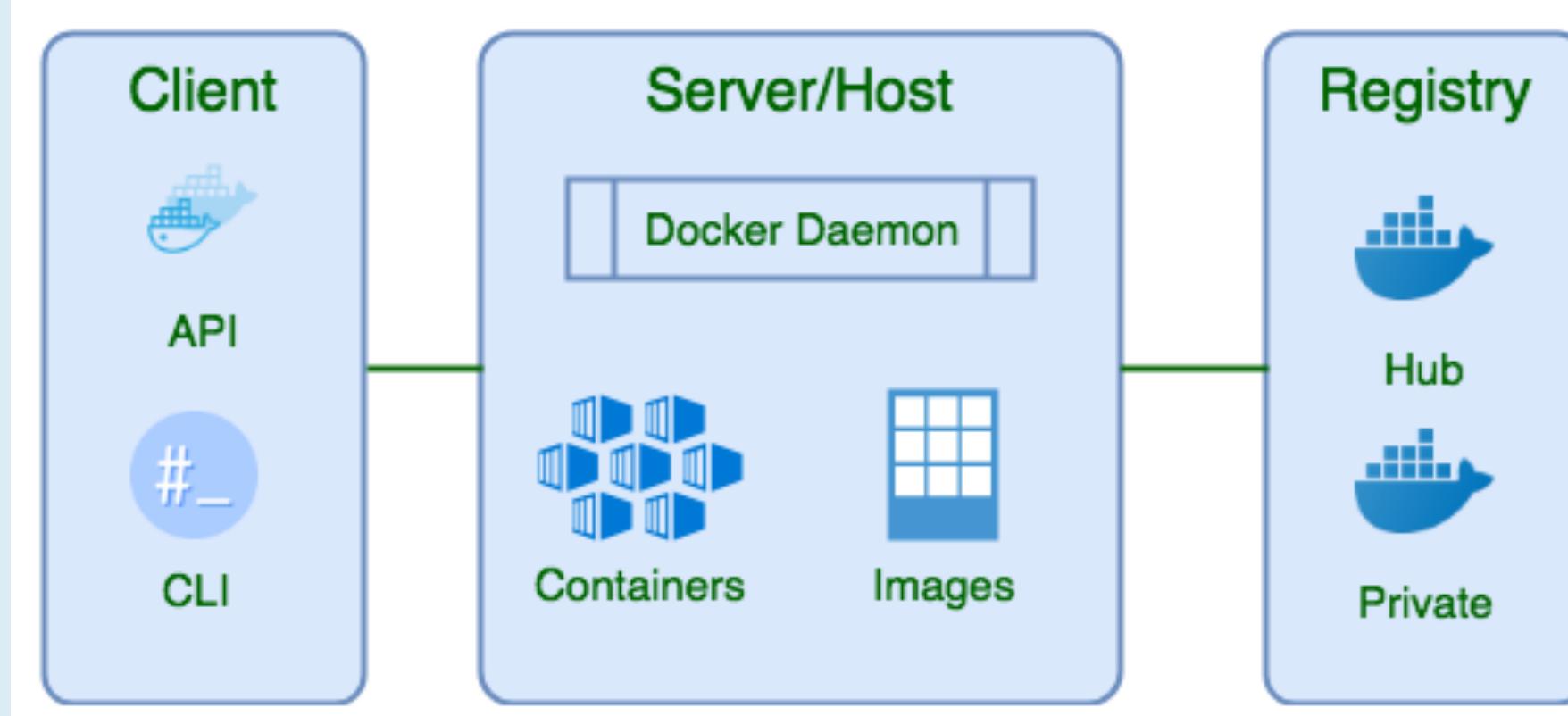
**Container Based Implementation**



**Virtual Machine Implementation**



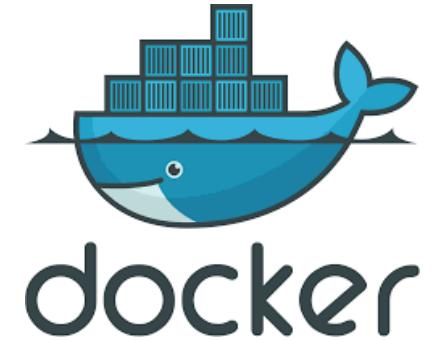
# Infraestructura de Containers



# Infraestructura de Containers

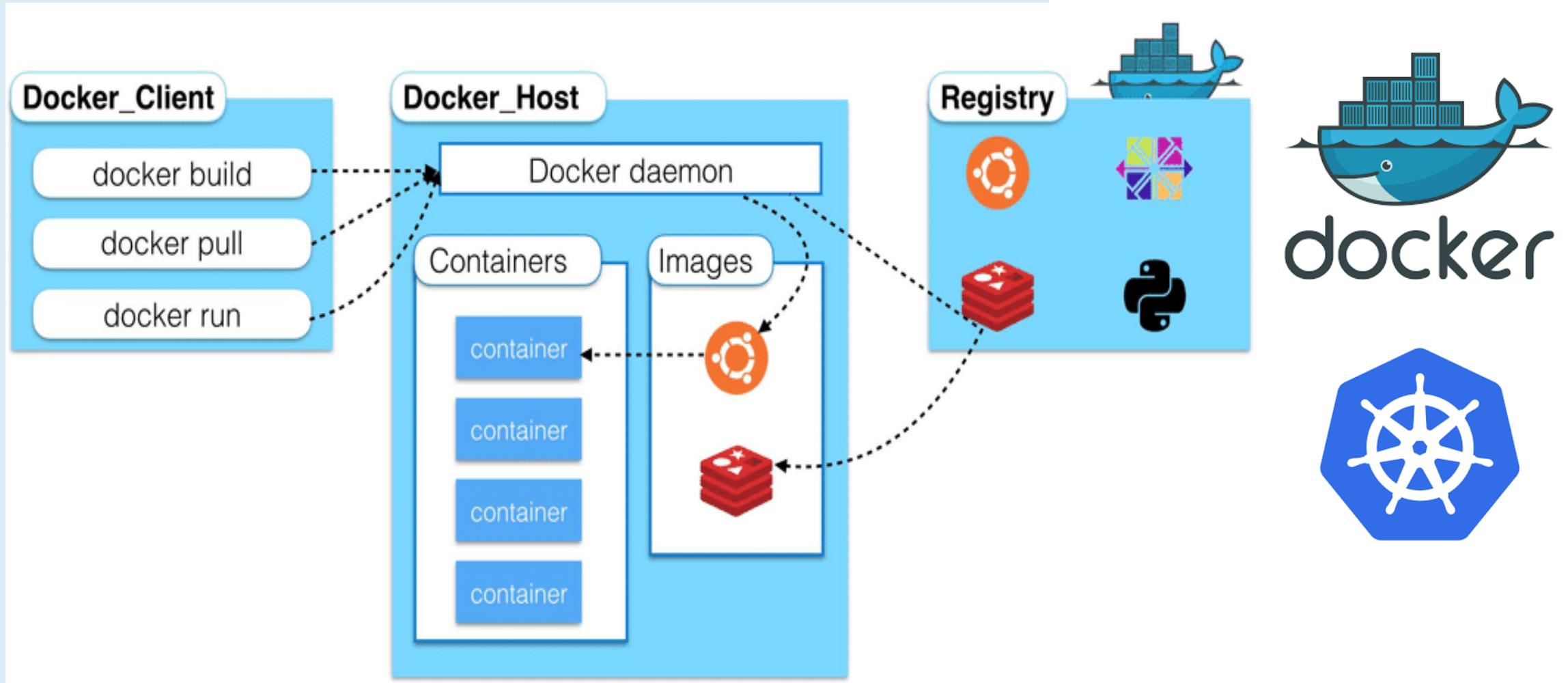


- Configuration File
- Image
- Registry



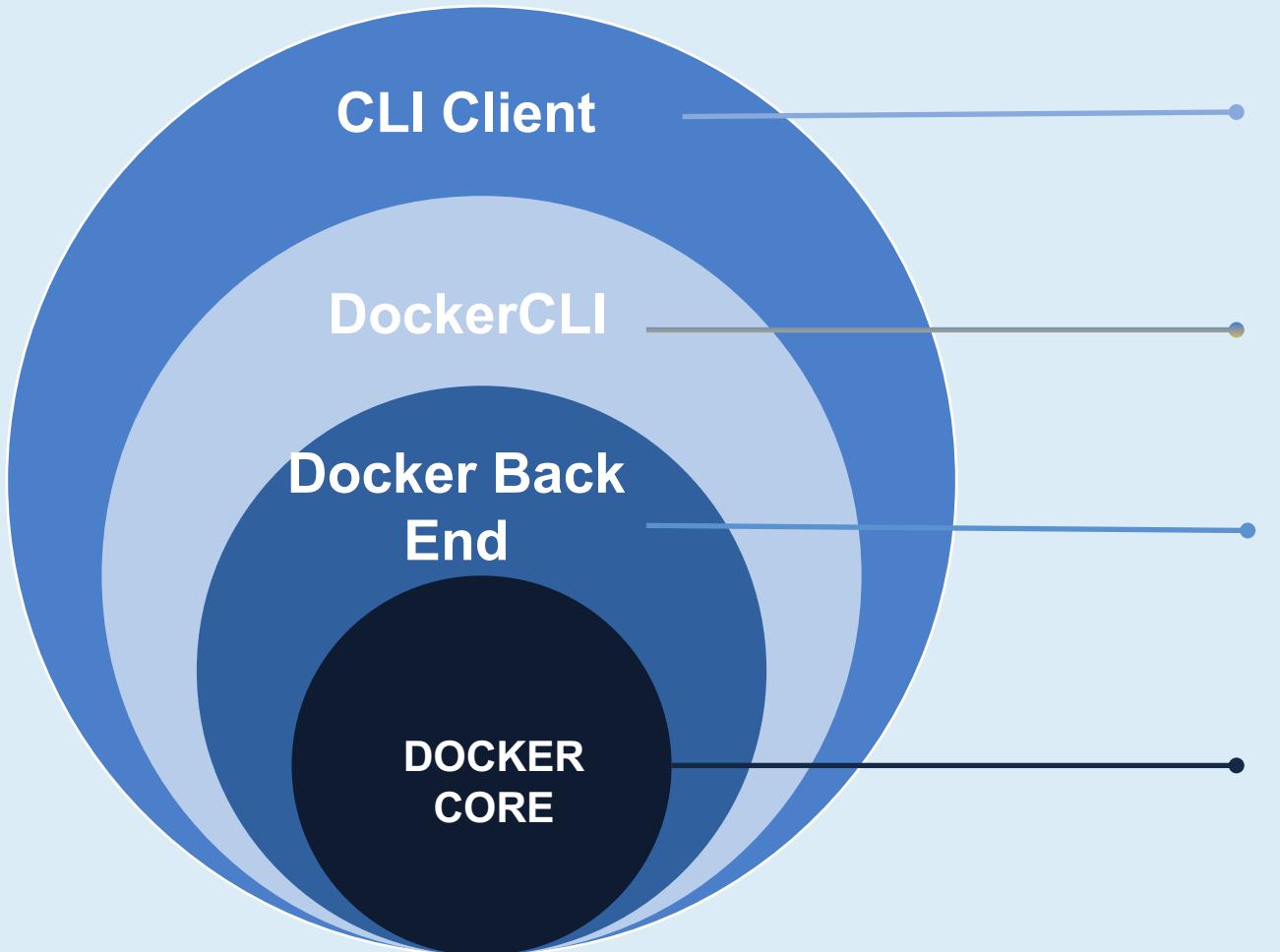


# Infraestructura de Containers



# Docker Tiers

Breakdown of tier service communication



## **CLI Client**

Command Line Interface Powershell,  
Terminal

## **Docker CLI**

Docker Interpreter interface for Command  
Line Interface through Powershell console

## **Docker Back End**

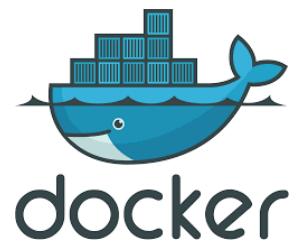
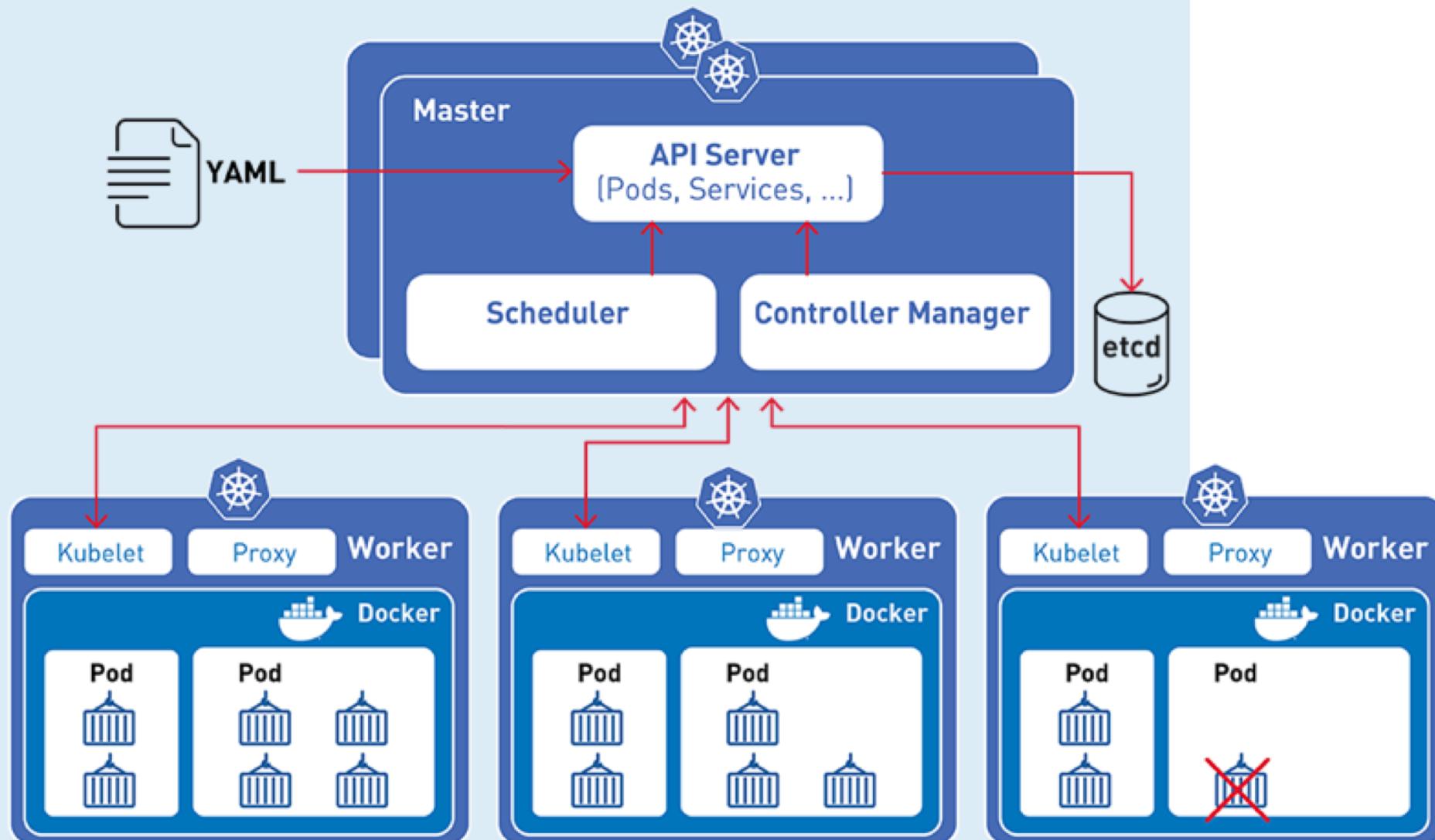
Set of resources to control the machine  
and container hub

## **Docker Core**

Layer that handles the service and the  
service container itself.

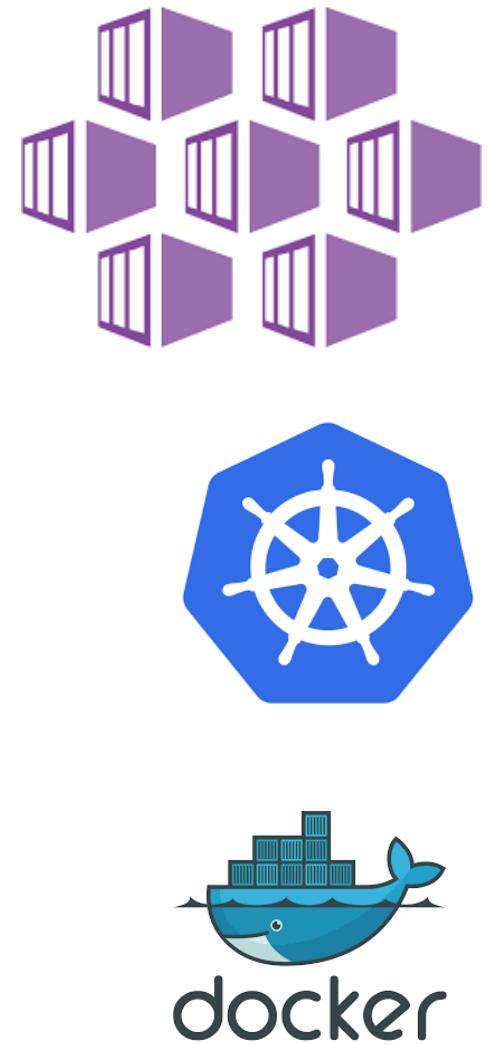
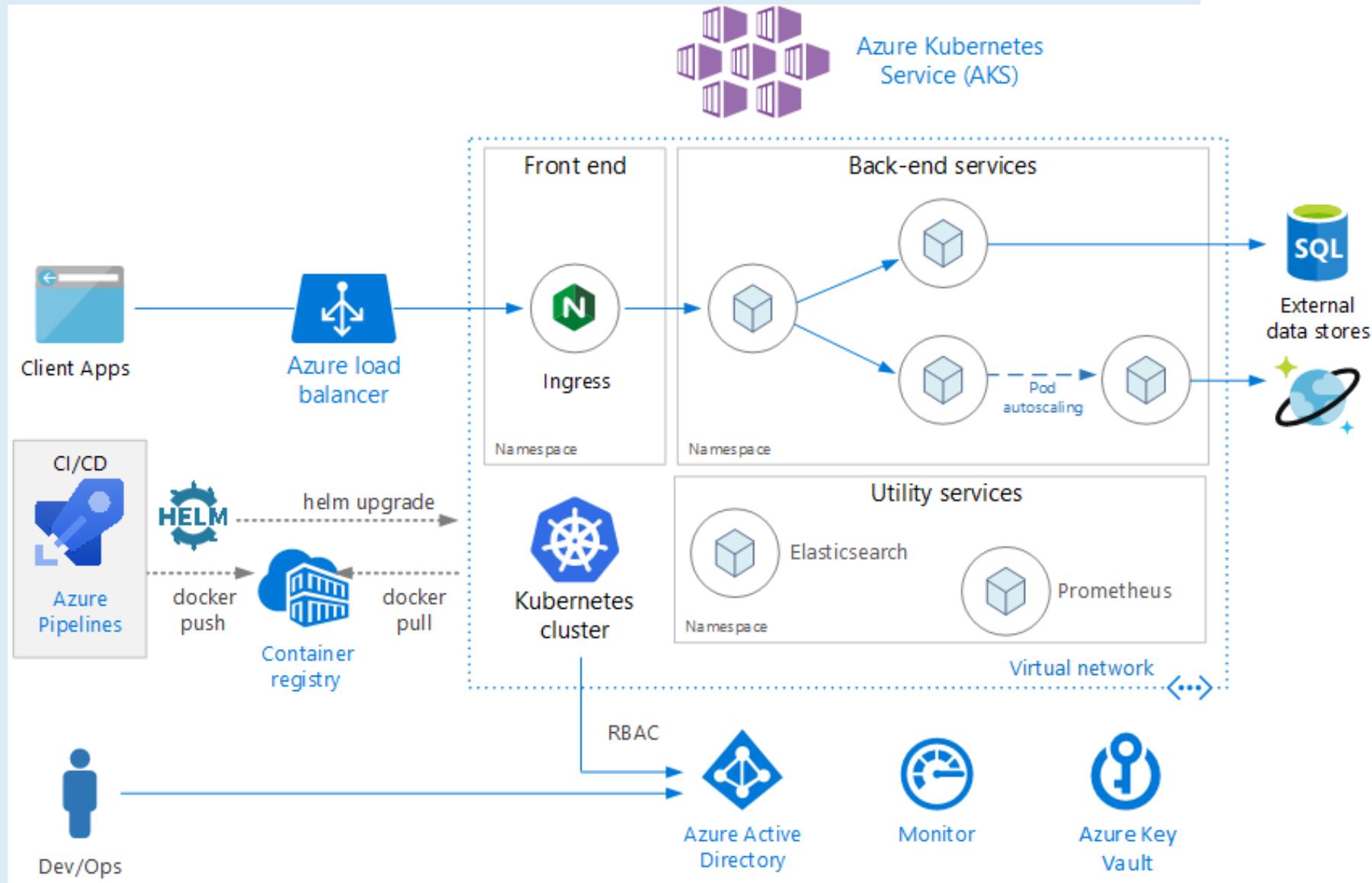


# Infraestructura de Kubernetes





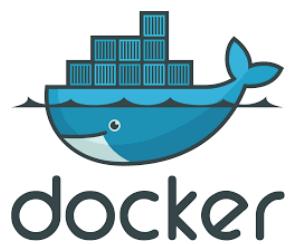
# Infraestructura de Azure Kubernetes AKS





# SQL Server en Linux

- Soportado para distros: Red Hat, Ubuntu, SuSe
- Funcionalidades de Motor de base de datos complete y transparente.
- Funcionalidades de Alta Disponibilidad con ciertas excepciones en Availability Groups.
- Análisis Services no disponible ya que es un feature independiente del motor.





# Demo



# Resumen

- Hypervisor
- Kernel
- Unikernel
- Container
- Dockerfile y YAML file
- Katcoda, Docker, Kubernetes



# Material



## Presentation

<https://thedbamuppity.blogspot.com/2018/10/using-docker-and-sql-server.html>

## Github

<https://github.com/Muppity/Presentations-Material>

## Docker, Kubernetes Resources

[https://hub.docker.com/\\_/microsoft-mssql-server](https://hub.docker.com/_/microsoft-mssql-server)

<https://kubernetes.io/docs/tutorials/hello-minikube/>



## Social Networks



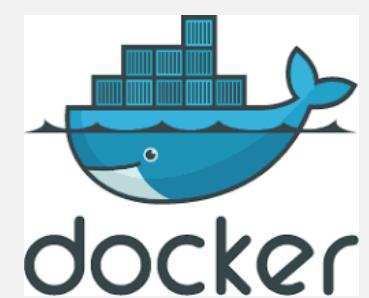
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# More materials

## Próxima presentación

Utilizando Containers en nubes hibridas

## Material

<https://docs.microsoft.com/en-us/sql/linux/sql-server-linux-editions-and-components-2017?view=sql-server-2017>

<https://docs.microsoft.com/en-us/azure/architecture/reference-architectures/microservices/aks>

[https://docs.docker.com/develop/develop-images/dockerfile\\_best-practices/](https://docs.docker.com/develop/develop-images/dockerfile_best-practices/)



**THANK YOU**