

Everything EMC-Docker 2016



促进软件开发领域知识与创新的传播



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咨询热线: 010-64738142



全球架构师峰会 2016

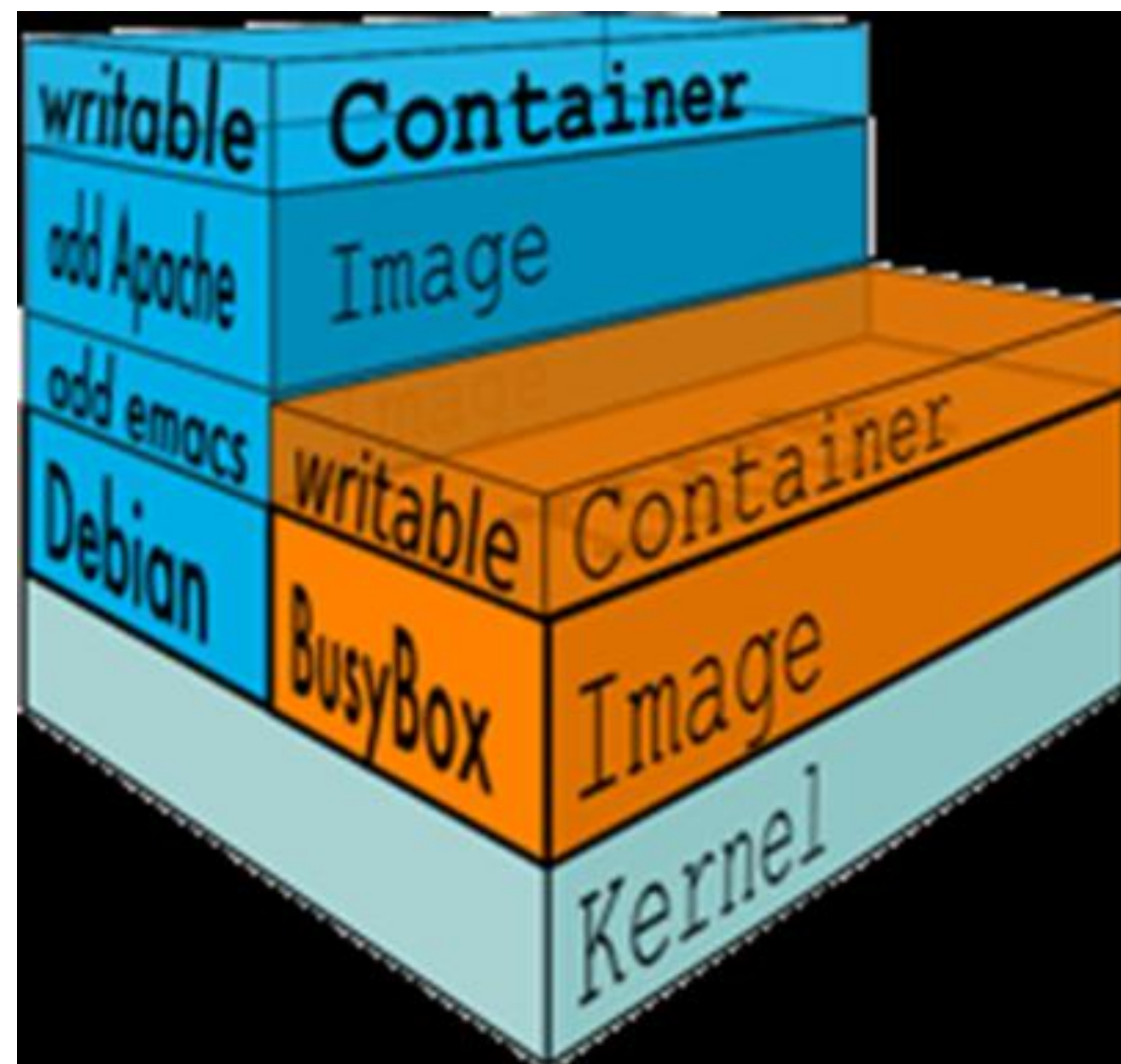
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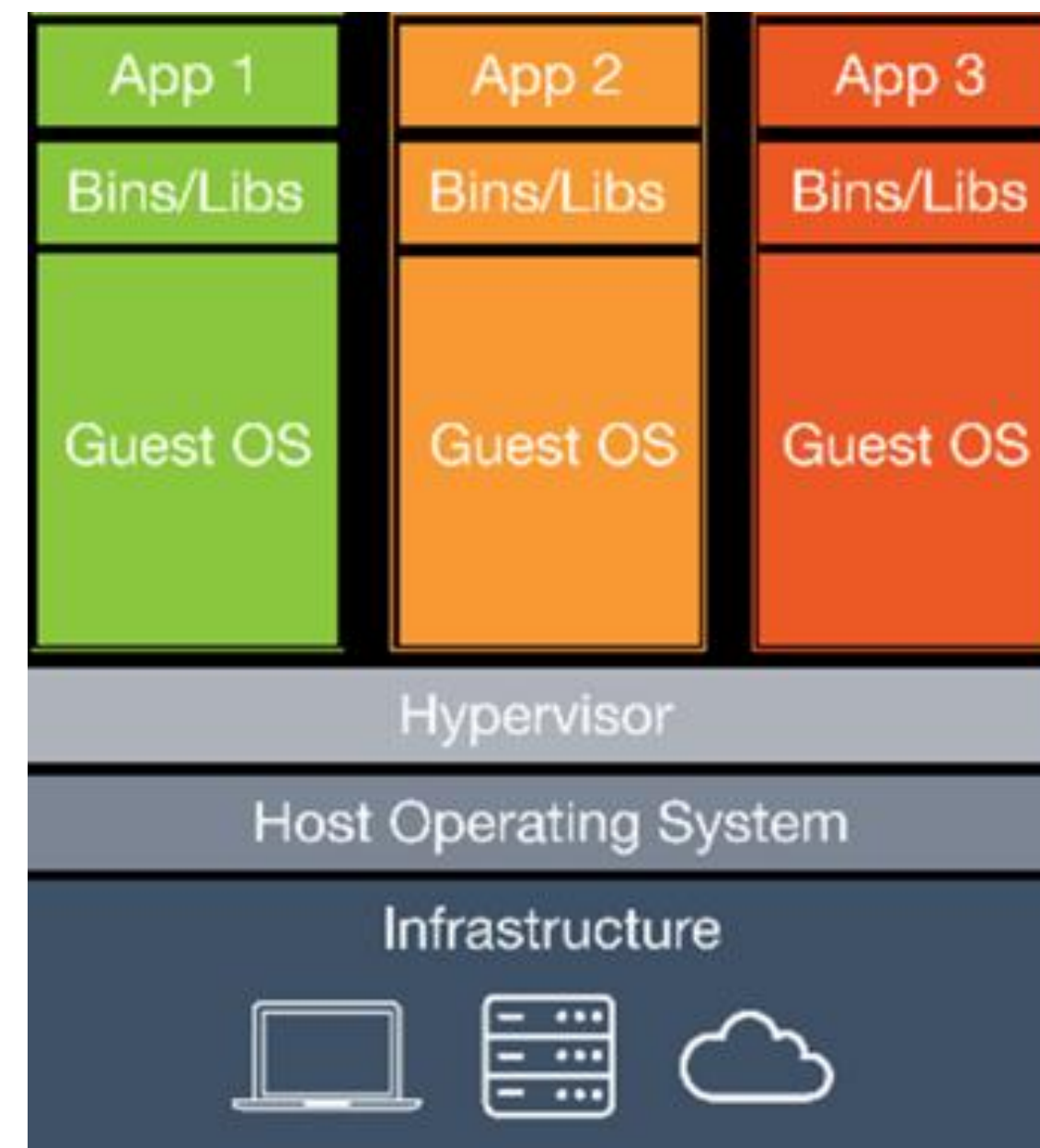


WHY DOCKER?

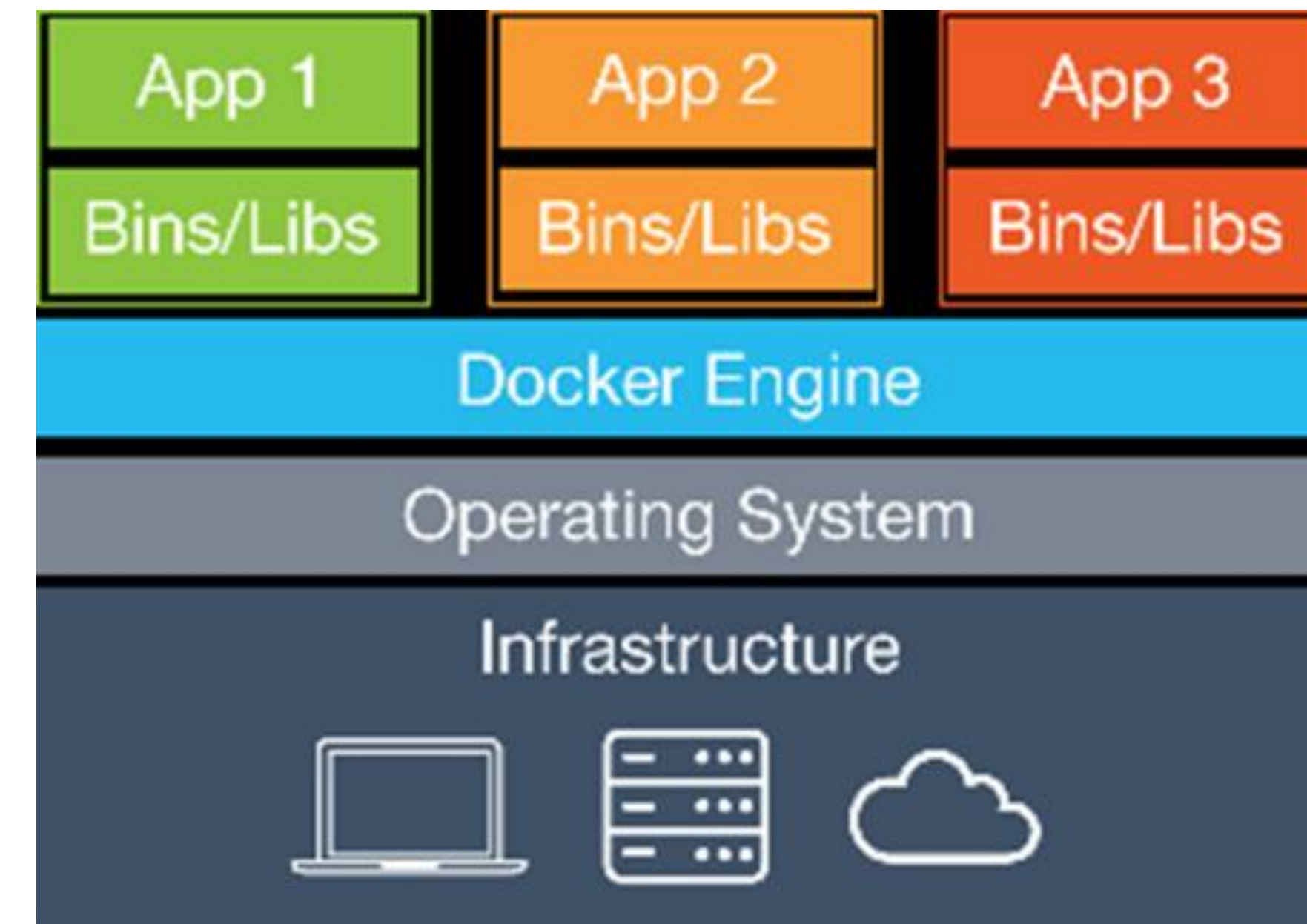
Docker

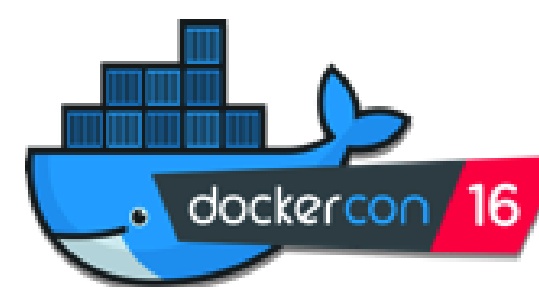


Virtual Machines



Containers

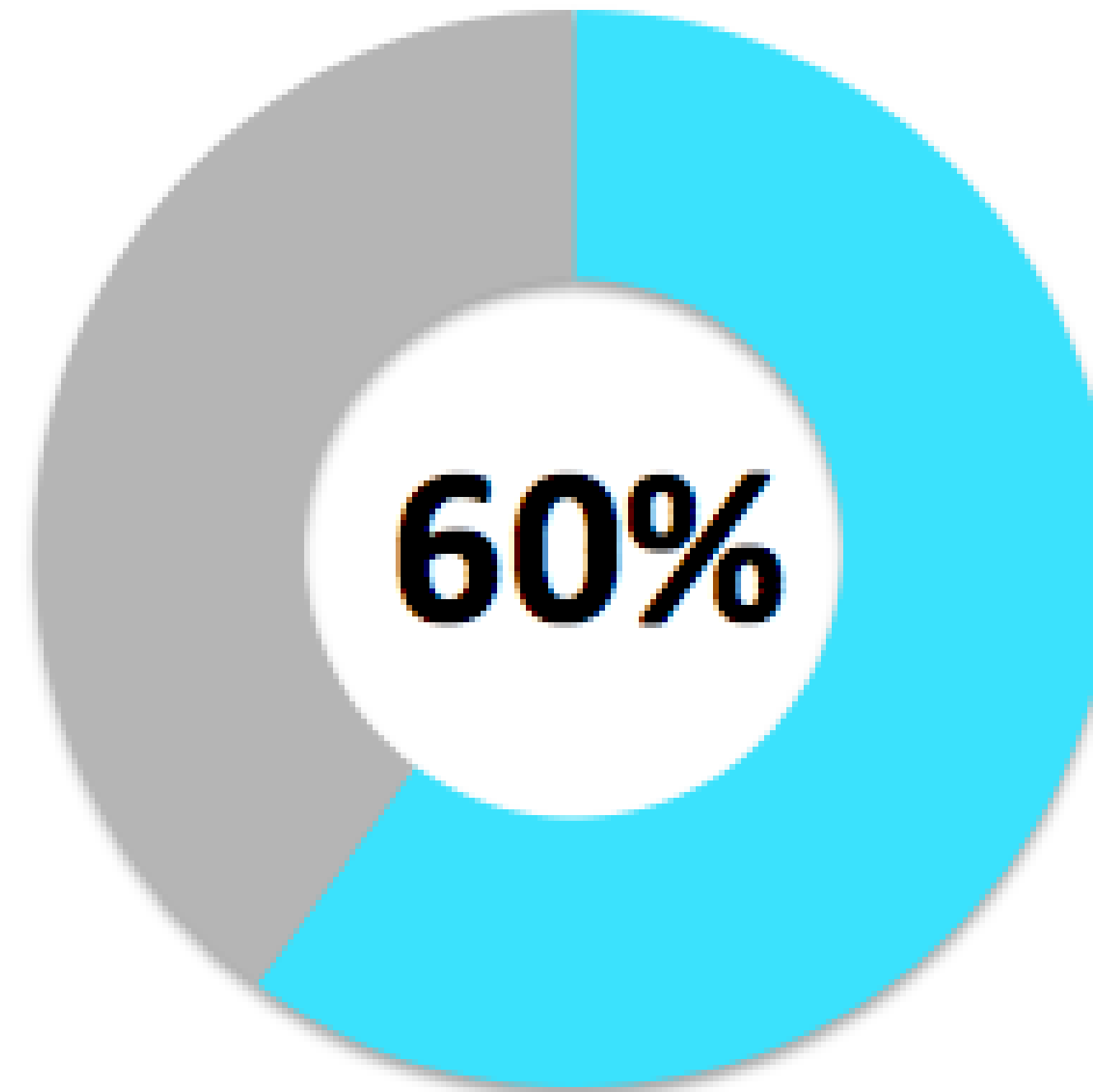




	2014	2016
Functionality	Engine	Engine, Orchestration, Networking, Plugins, Security, ++
Platforms	64 bit linux	64 bit, 32 bit Windows, Unikernels, integrated cloud, hardware & Converged
Use Cases	Dev/Test	Production, Traditional & Next Gen infra & apps. 40-75% Enterprise Usage
Users	Web Companies	Web, Manufacturing, Government, Finance, Health, Scientific

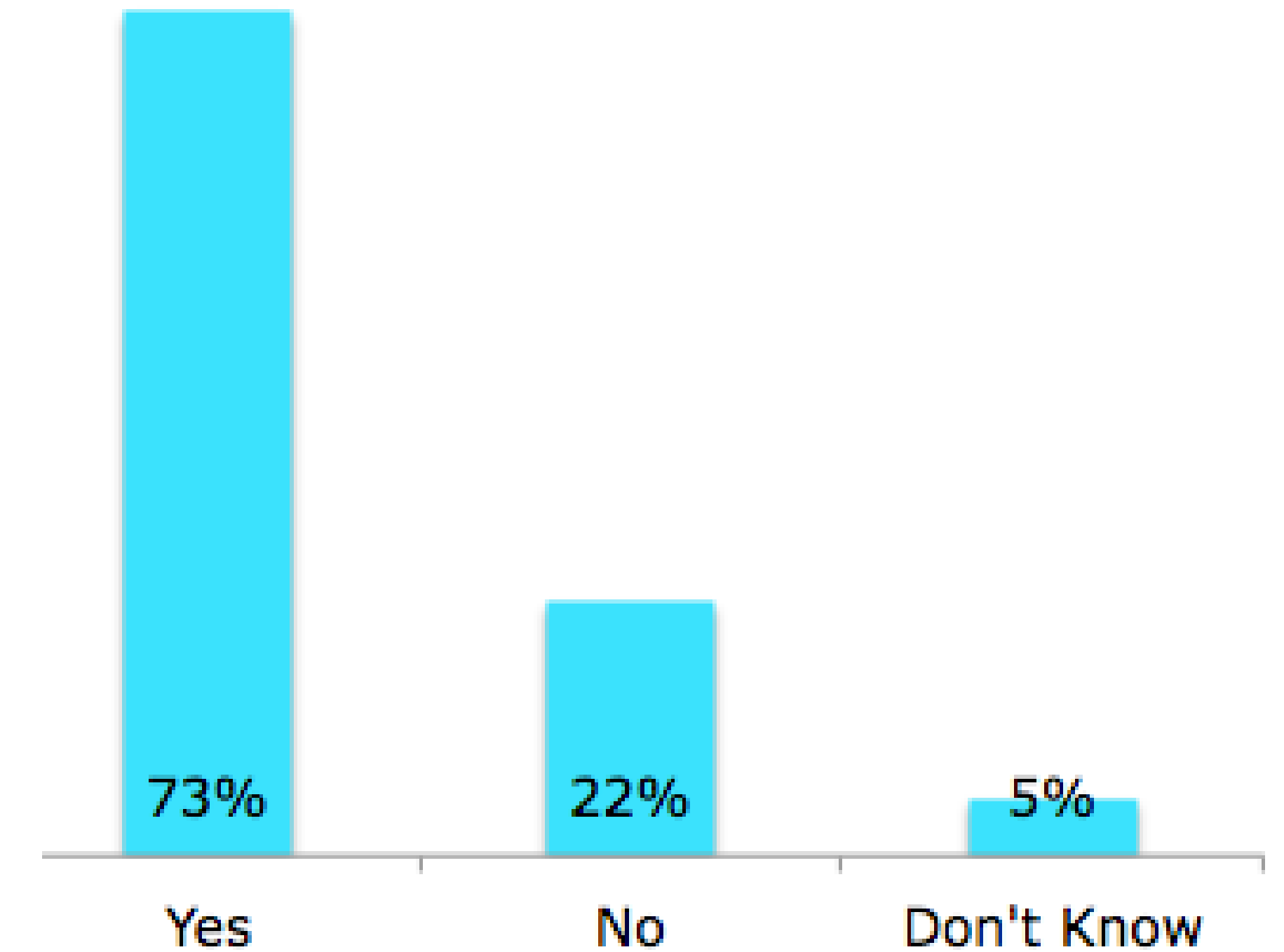
DOCKER IN PRODUCTION

Docker Users already running
in Production



Docker Survey, State of Applications, Q1 2016

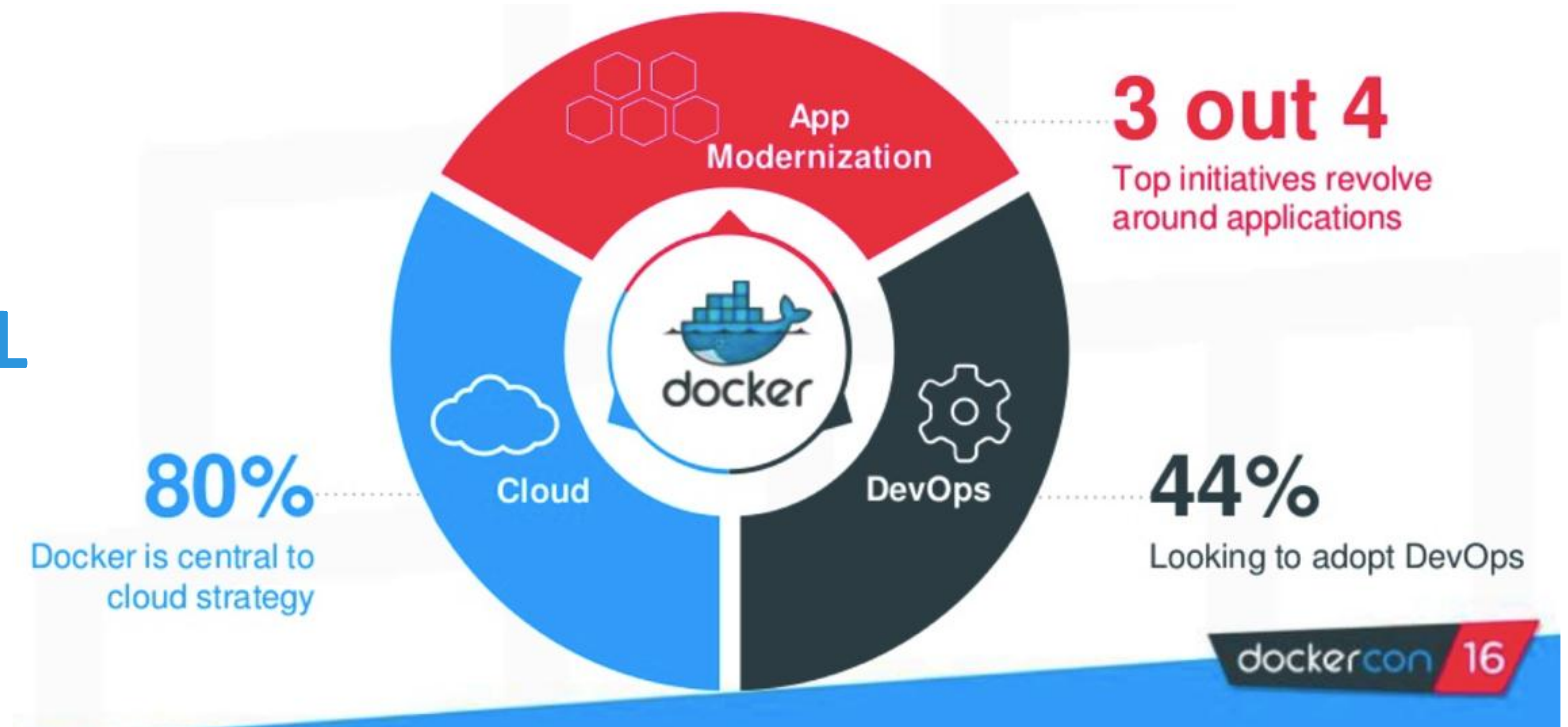
Companies running container
technology in Production
(500+ employees)



ClusterHQ – State of Container usage, June 2016

* These surveys were done by Docker & ClusterHQ & have not been verified by any 3rd Party sources

DOCKER ENABLING CRITICAL TRANSFORMATIONS



Docker Survey – State of App development, Q12016

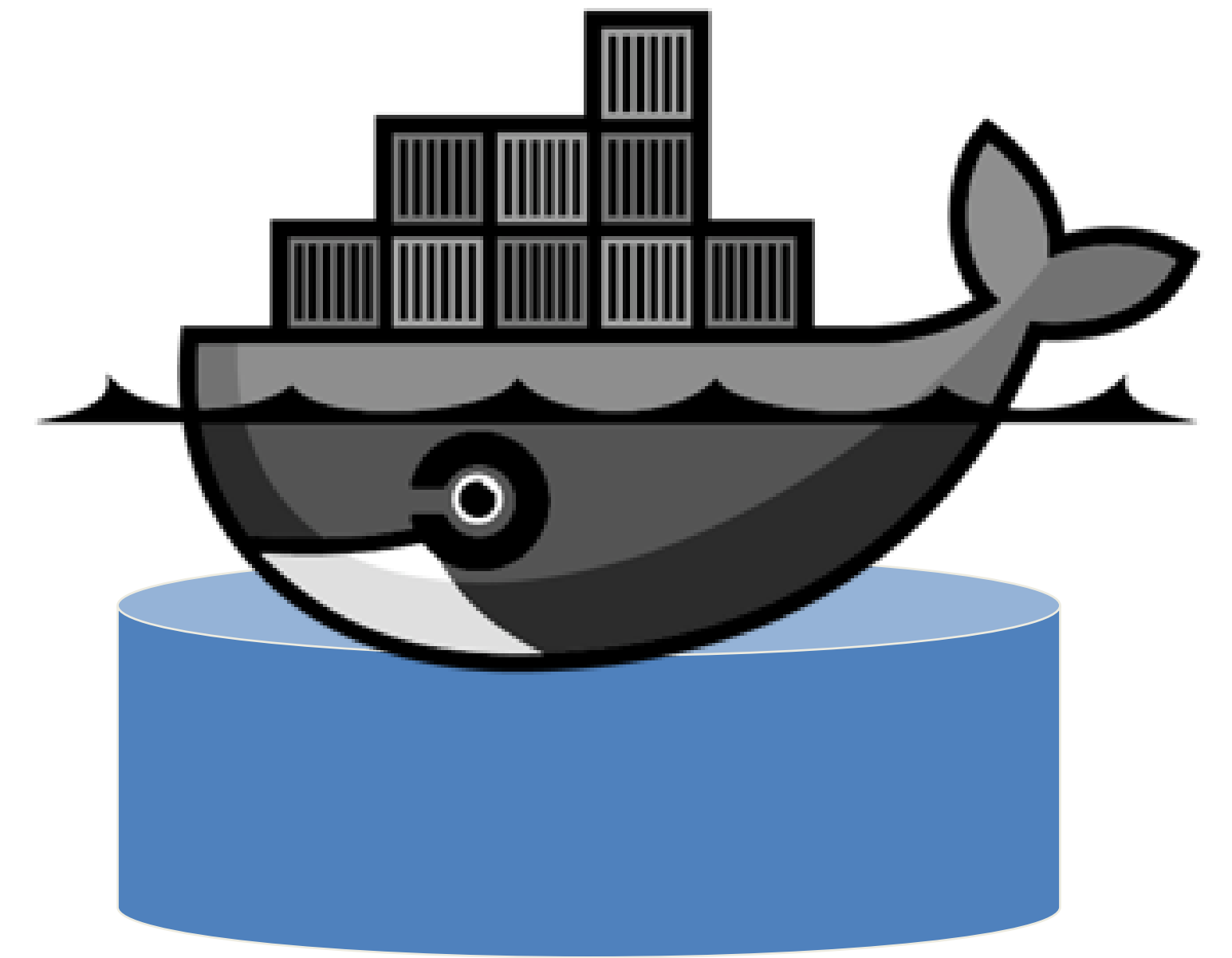
A little History in Storage



EMC

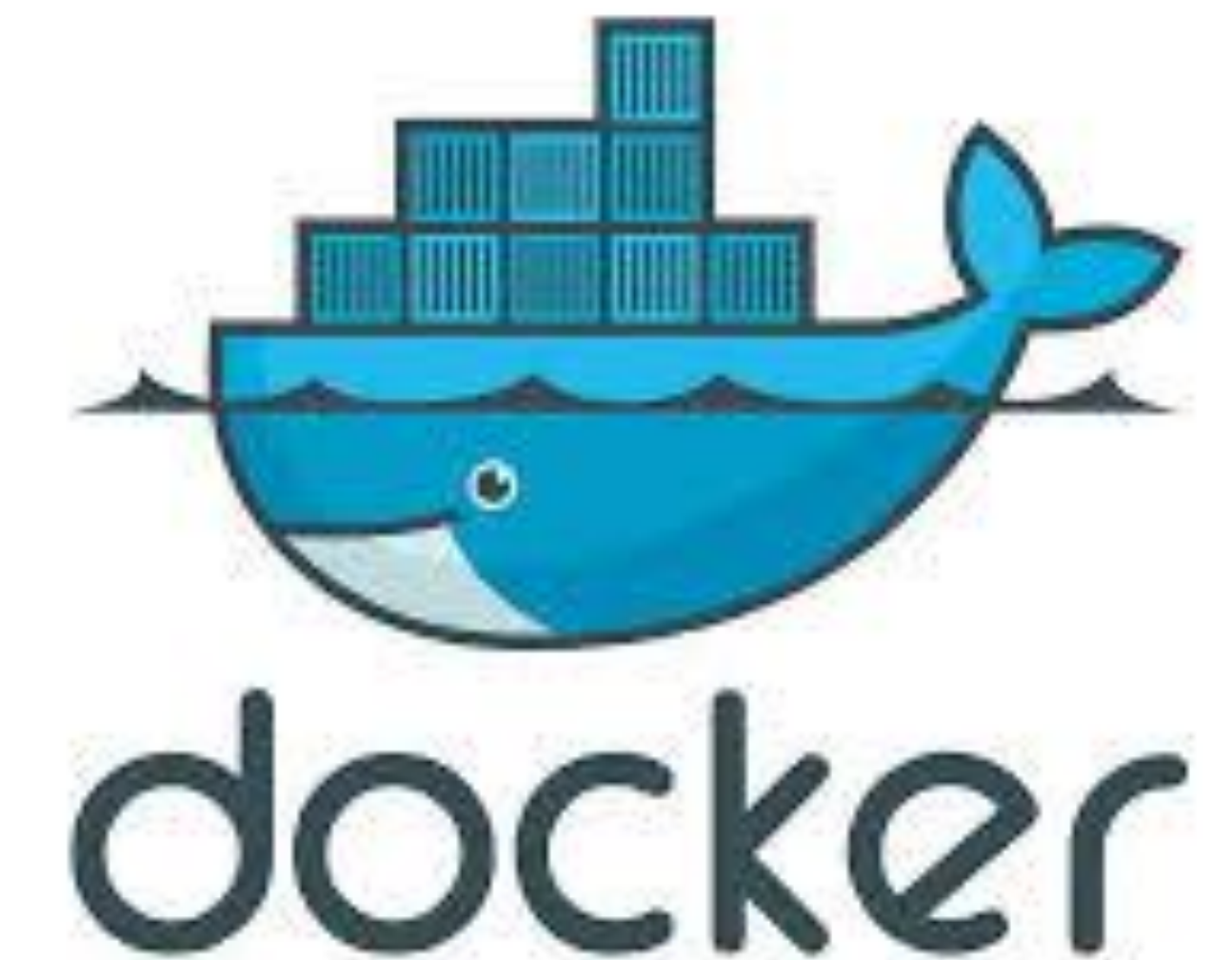
Storage in a Container World

- Primary design pattern and focus of Docker was the non-persistent use of Graph Drivers (–storage-driver)
- Docker uses drivers based on Kernel FS modules that enable use of layered Docker images to create a Read/Write Union File System that serves as primary storage for a container
- The persistent part of the design pattern for containers typically comes from using Volumes that are first attached to a Linux OS and then to a specific Container. Accomplished via: Kernel storage modules, SCSI & NFS



Docker Release – Storage Integration

- **Docker 1.7** was the first release that adds Volume plugin functionality in “experimental phase”
- **Docker 1.8** included volume plugins, allowing you to back Docker volumes by any third-party storage system, i.e. Ability for Storage Partner ecosystem to integrate their storage with Docker
- **Docker 1.9** allows an orchestration system to setup volumes as needed, separate from the container lifecycle. This integrates with the plugin system. The plugin system worries about provisioning the actual storage to provide to Docker, the volume API is the user-facing side that drives those plugins.



What are Volume Plugins?

- Docker now has volume API's so you can manage the entire lifecycle of a volume
- Volume plugin functionality allows Docker to request that Volumes be created, removed, mounted and unmounted to the local Linux OS
- Docker Engine and its API enables and is responsible for requesting that specific volumes be made available for use with Containers, schedulers and other things that work with the Docker API to take advantage of the functionality



EMC – Docker Integration



REX-Ray 0.2



REX-Ray 0.3



Docker Machine
Driver with
RackHD

More
Integration



June 2015
Docker 1.7

Volume Plugin Functionality
Experimental

Aug 2015
Docker 1.8

Volume Plugin Functionality
GA

Aug 2015
Docker 1.9

Redesigned Volume
Plugins System

Project REX-RAY



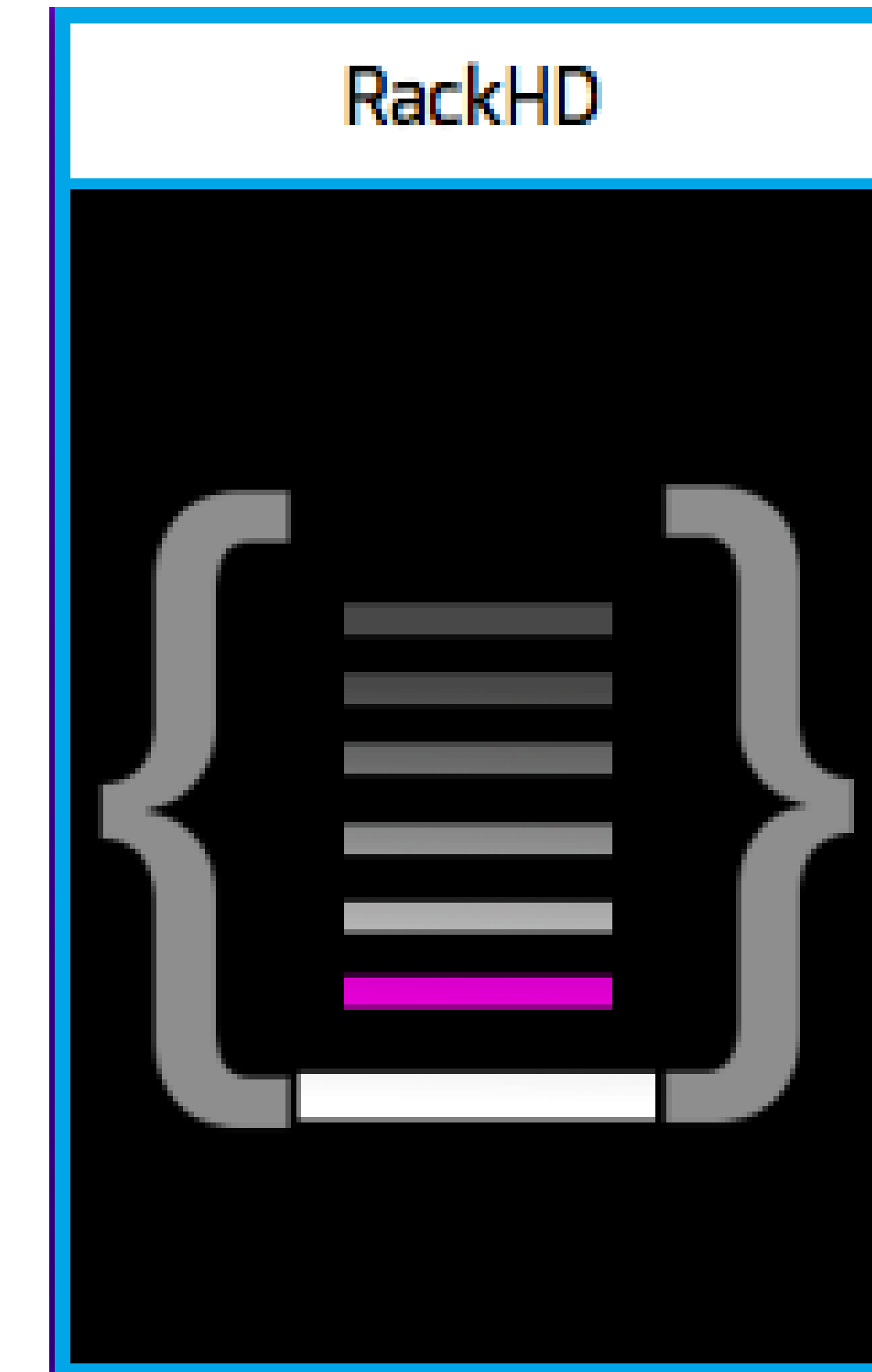
- Developed by the EMC CODE team
- A guest based storage introspection tool that allows local visibility and management from cloud and storage platforms
- This storage can be from a specific storage platform in addition to being provided by virtual infrastructure
- 3 types of drivers
 - Volume Driver
 - Storage Driver
 - OS Driver

Current Storage Drivers

- Block
 - Cloud infrastructure
 - EC2
 - OpenStack
 - Software-Defined with Kernel Module
 - ScaleIO
 - iSCSI
 - XtremIO (with/without Multipath and Device-Mapper)
- NAS

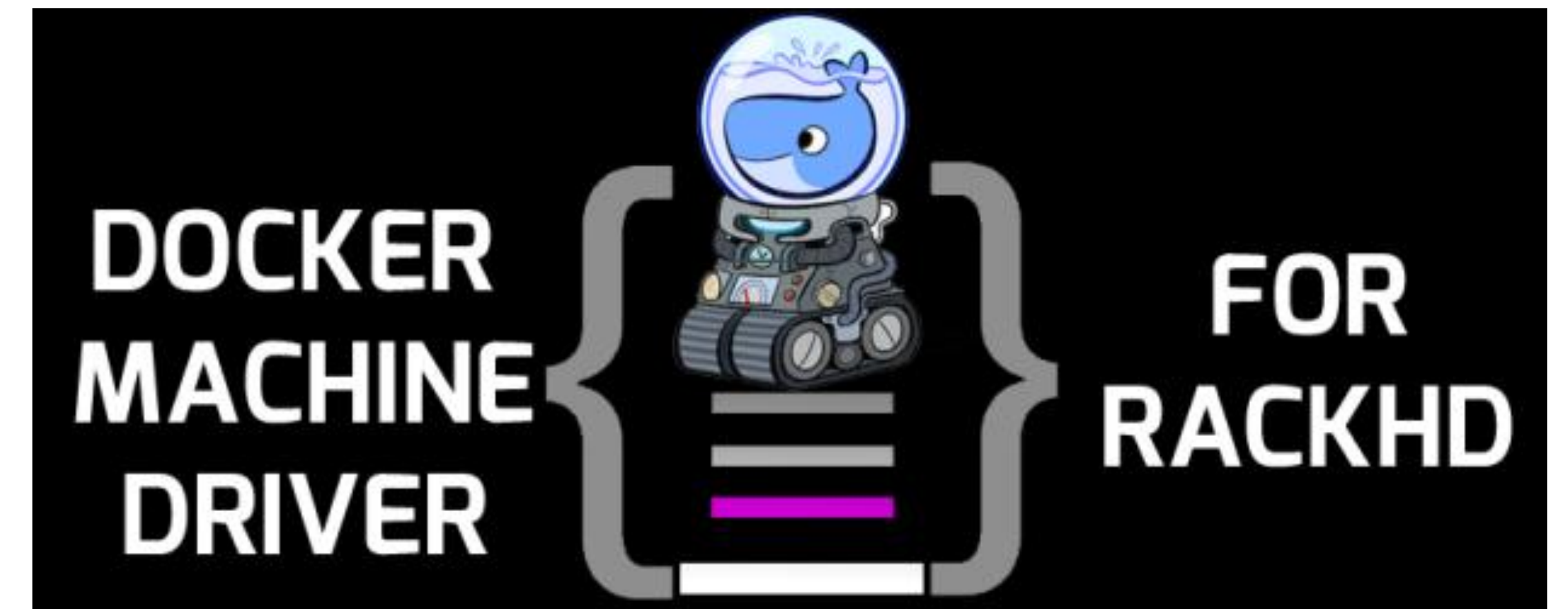
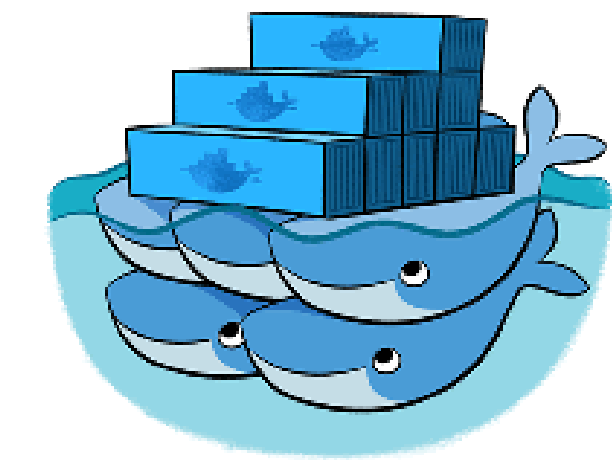
RACKHD

- Abstraction layer between other M&O layers and the underlying physical hardware
- Ability to discover existing hardware resources, catalog each component & retrieve detailed telemetry info from each resource
- RackHD API allows you to automate various mgt. tasks such as install, configure and monitor
 - Bare Metal hardware (Compute Servers, PDU's, DAE's, Network switches)
 - Provision and De-Provision Operating Systems
 - Install and upgrade Firmware
 - Monitor Bare metal h/w through out-of-band mgt. interfaces
 - Provide data feeds for alerts & raw telemetry from hardware
- [Introducing RackHd - Automate Bare Metal](#)



DOCKER MACHINE DRIVER FOR RACKHD

- 1st Solution that enables bare-metal provisioning of Docker & Docker Swarm
- Start, Stop, Restart, Kill, and Remove require the use of IPMI. This must be configured in RackHD
- Requirements
 - VirtualBox 5.0.10+
 - >4GB of Available RAM
 - Internet connection
- [Docker Machine driver for RackHD Vagrant demo](#)
- [Blog link for more details](#)





EMC ECS SOFTWARE 2.0 FREE “DOCKER-IZED” DOWNLOAD

- Free access to a secure cloud object storage test environment
- Test code and applications with a fully functional environment – no public cloud service required!
 - Developers go from prototype to production faster
- Deploy POC with lower cost and less risk
- Download it from dockerhub.com
- Community Driven Support



AUTOMATES AND MANAGES ENTIRE STORAGE INFRASTRUCTURE



EMC Storage: VMAX, VNX, VNXe, Isilon, ScaleIO, XtremIO

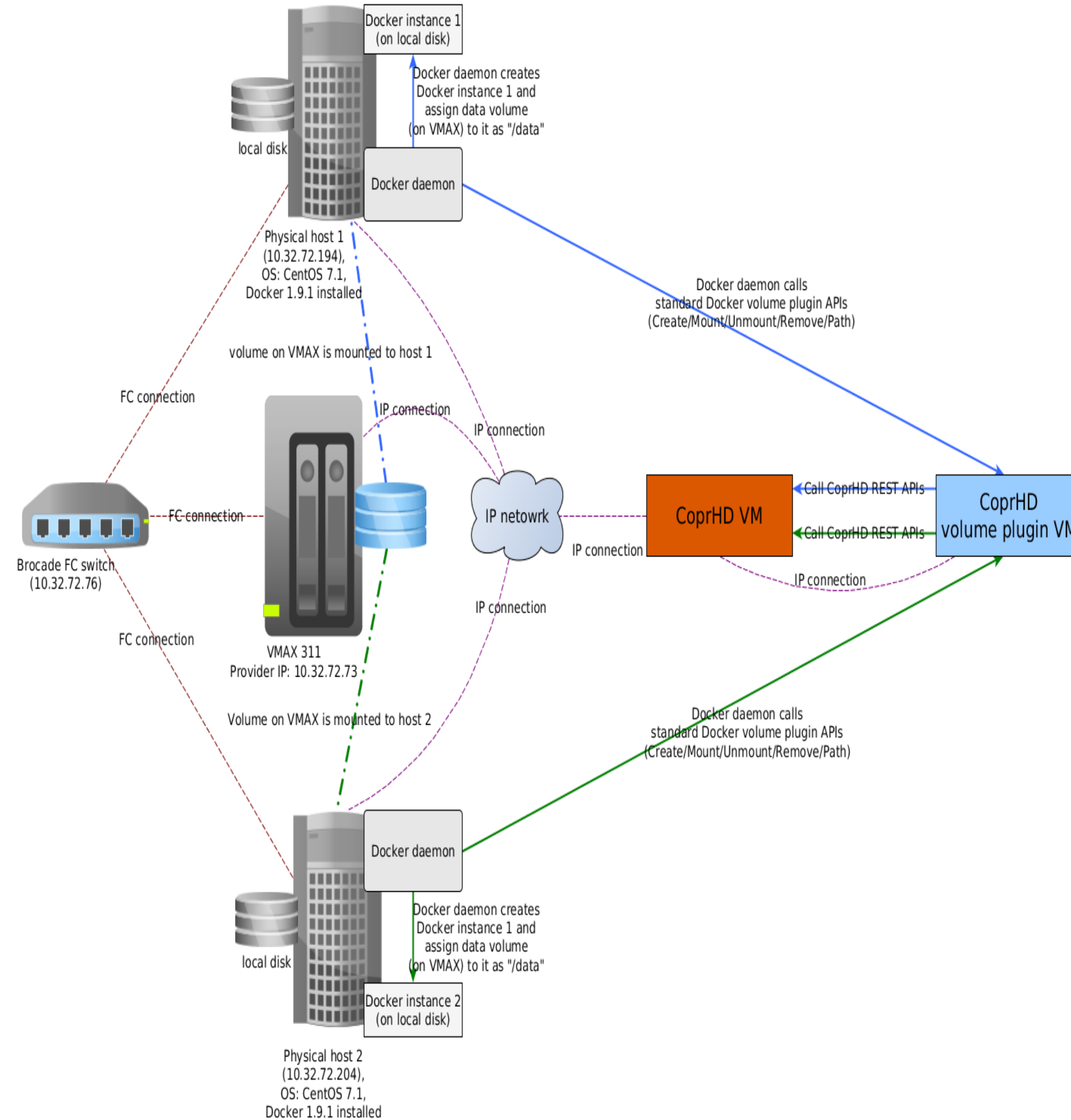
3rd Party Storage: Hitachi, IBM, HP, SolidFire, NetApp, & Oracle

Data Protection Technologies: VPLEX, RecoverPoint, SRDF, Data Domain

Converged Infrastructures: VCE Vblock Systems

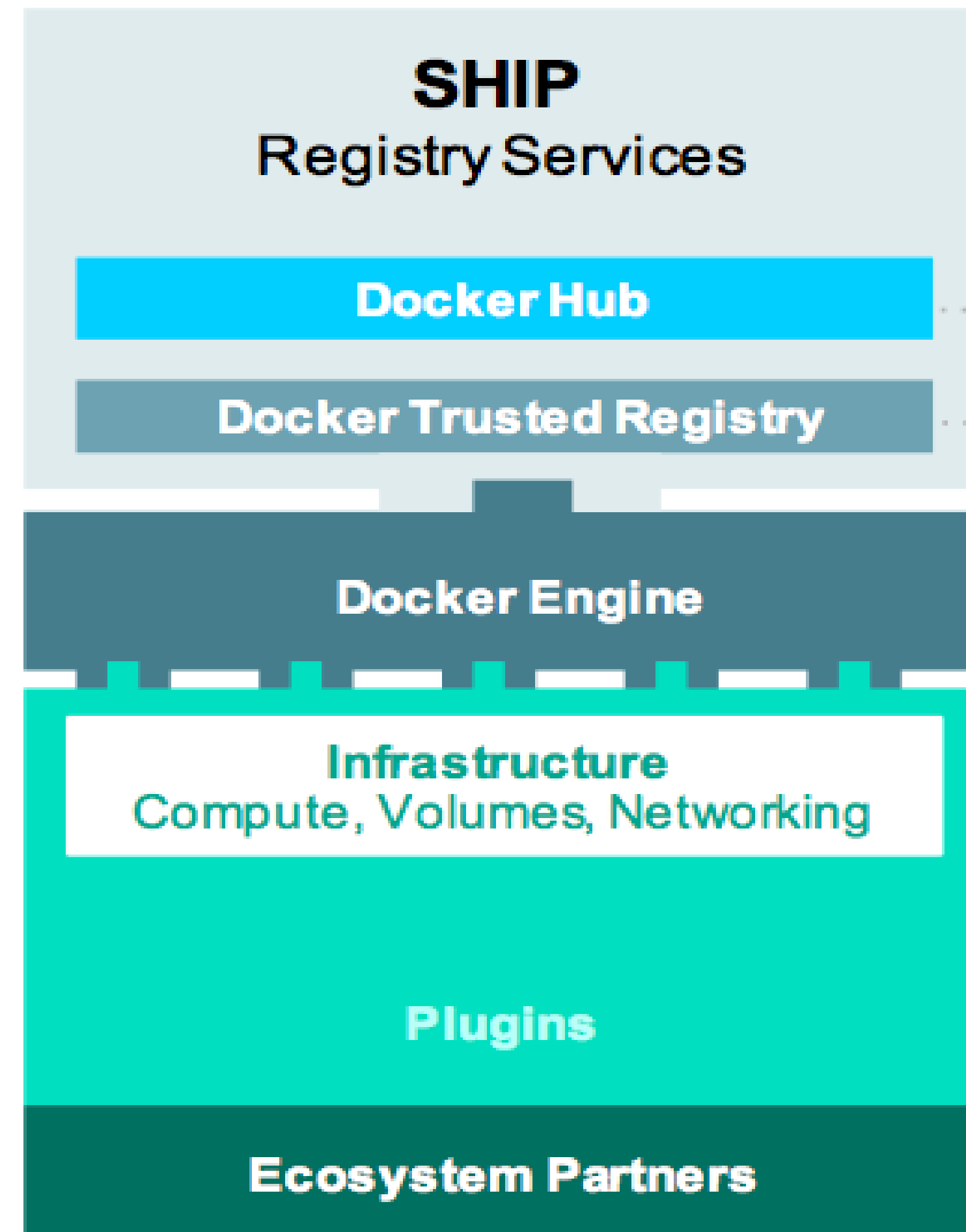
Integrates with Cloud Stacks VMware, Microsoft and OpenStack

USER CASES – MIGRATE ONE COPRHD VOLUME FROM ONE DOCKER HOST TO ANOTHER



- On Docker host 1, create a Docker volume;
 - The volume is provided by array managed by CoprHD
- On Docker host 1, create Docker instance 1 which uses the volume;
 - After that the Docker instance can read/write data on the volume provided by CoprHD
- Inside Docker instance 1, write some data on the volume;
- Exit Docker instance 1;
- On Docker host 2, associate the existing volume;
- On Docker host 2, create Docker instance 2 which uses the volume;
- Inside Docker instance 2, it can read the data from the existing volume and write new data to it.

MAPPING EMC PRODUCTS TO DOCKER'S



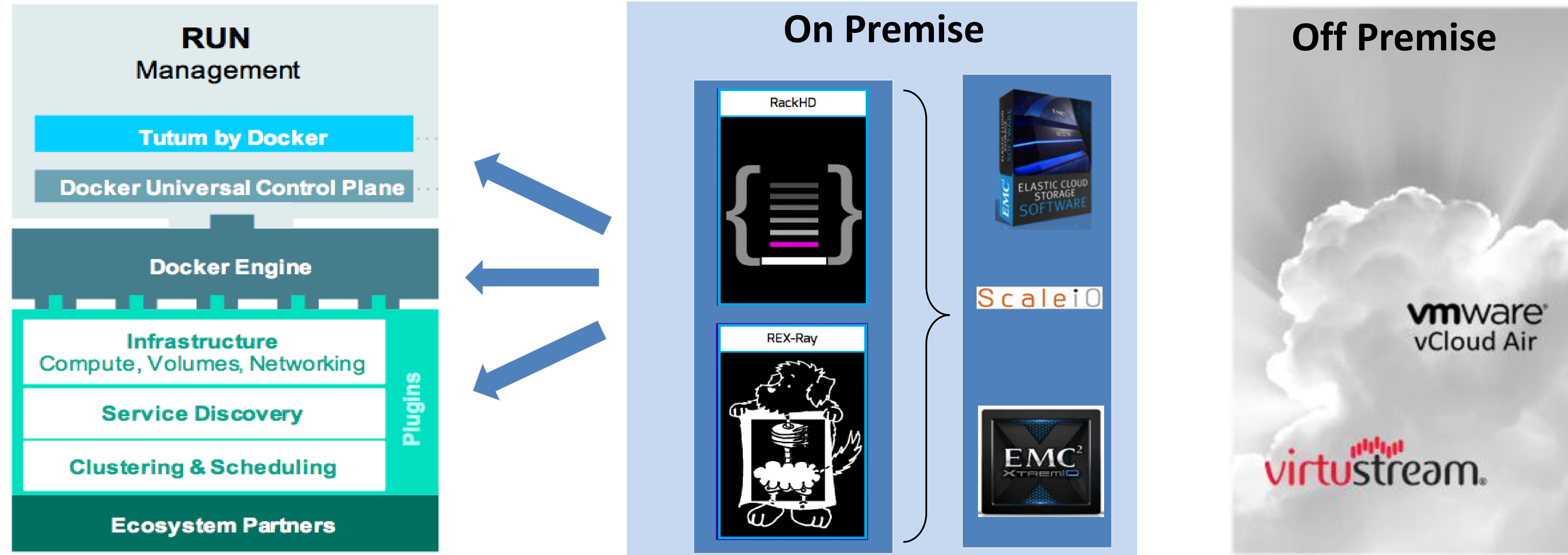
On Premise



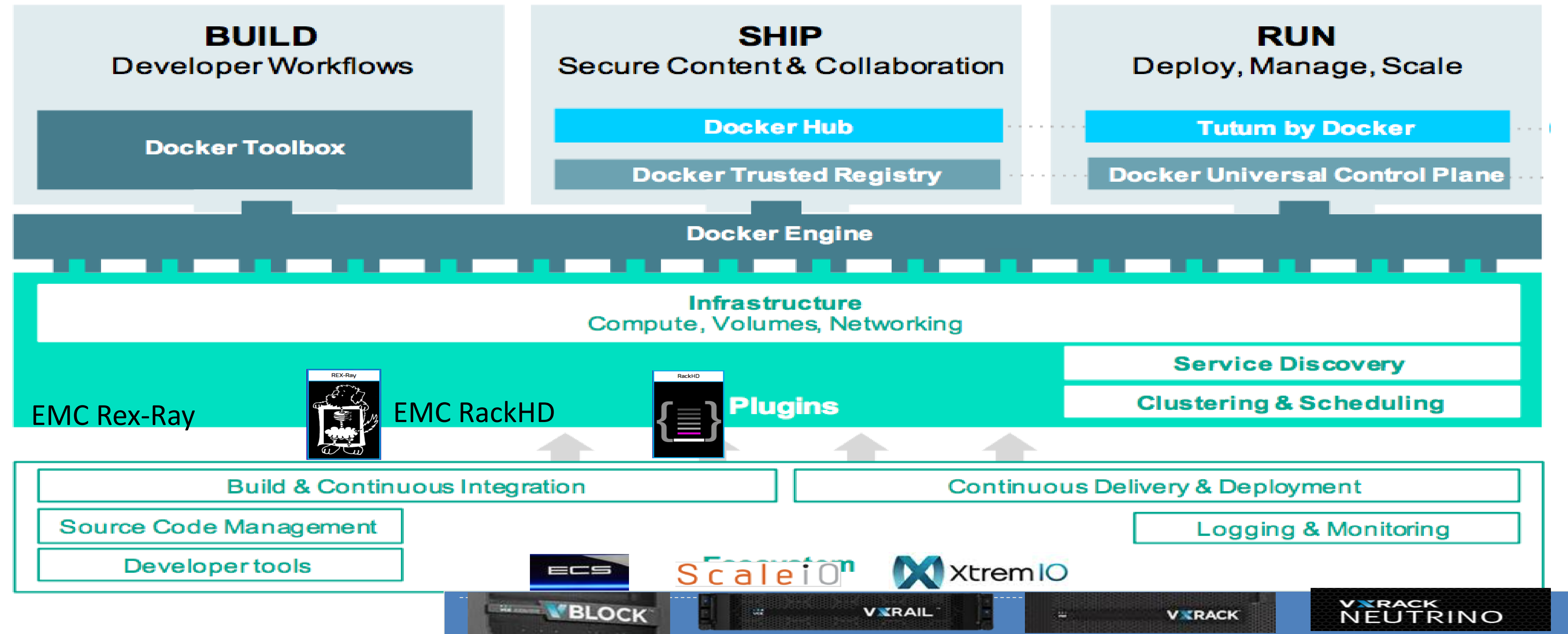
Off Premise



MAPPING EMC PRODUCTS TO DOCKER'S



EMC DOCKER INTEGRATION



EMC – OPENSOURCE INITIATIVES

OpenSource Initiatives

Open-Source Foundations



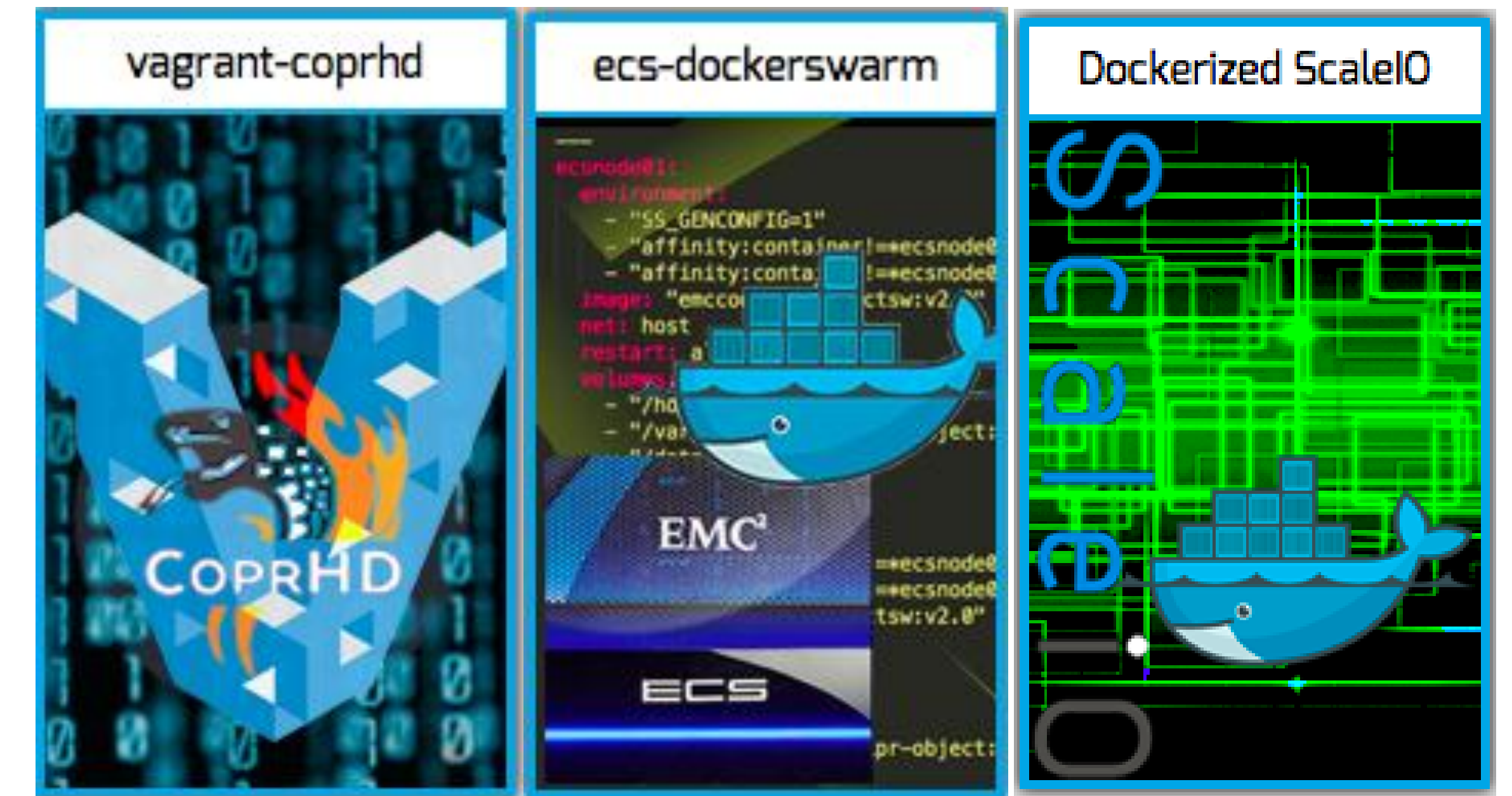


Open-Source Communities





Enabling Persistence, Volume Drivers for Containers, Mesos, and CloudFoundry



& MANY MORE

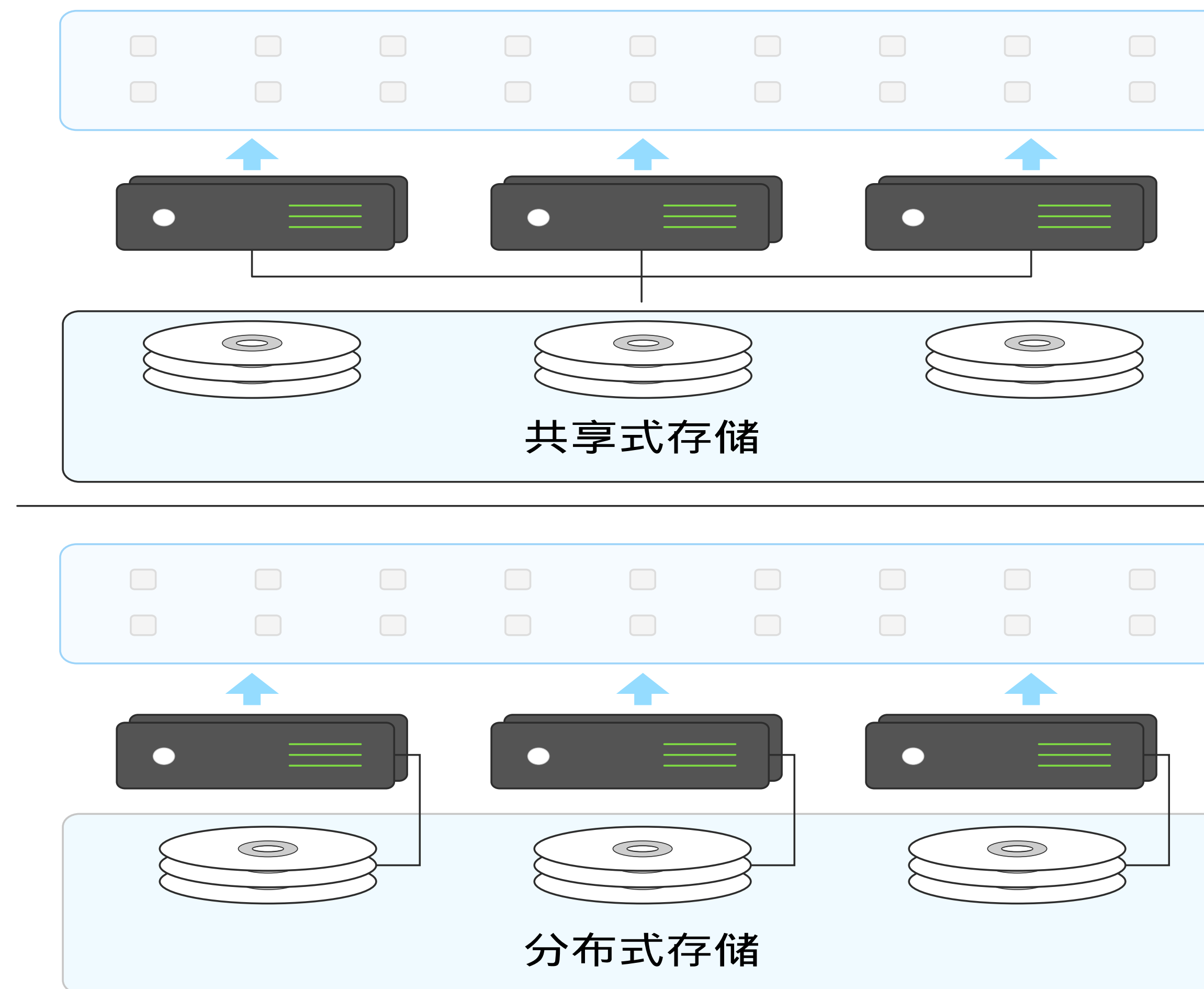
资源优化：存储适配，对接现有存储资产，软件定义存储

功能概述

- 通过 Docker Volume 方式，映射本机或网络存储
- 提供适配几乎所有主流存储系统的 Docker Volume 驱动
- 无缝对接 EMC ScaleIO 等企业级分布式存储，自动分配容量
- 充分发挥软件定义存储的能力，为应用配置适合的存储能力
- 实现容器数据持久化，Volume Snapshot，QoS，按需 IOPS 等高级功能，增强的数据保护能力

客户价值

- 再次充分利用现有 IT 资产，减少对底层存储平台的改动
- 软件定义存储，性能和容量充分可控，提高利用效率
- 通过容器 Volume 快照实现更高级别的数据保护
- 与容器平台充分对接，统一管理，提高可靠性
- 实现应用容器内无状态，共享存储，可以跨主机迁移容器
- 为容器化大数据应用等企业级存储场景奠定坚实基础



THANKS!

