Running MarkLogic in Containers (Both Docker and Kubernetes)

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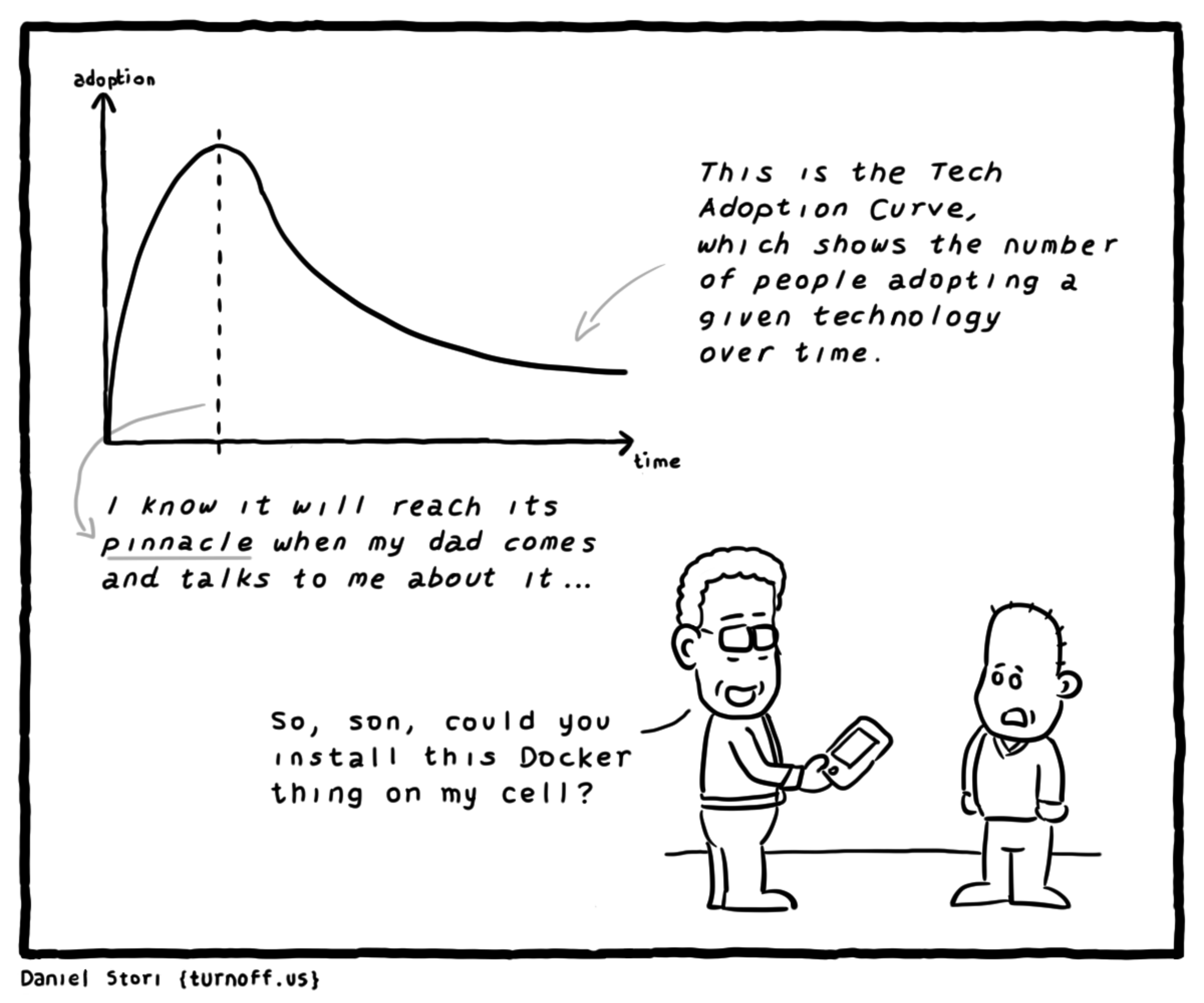
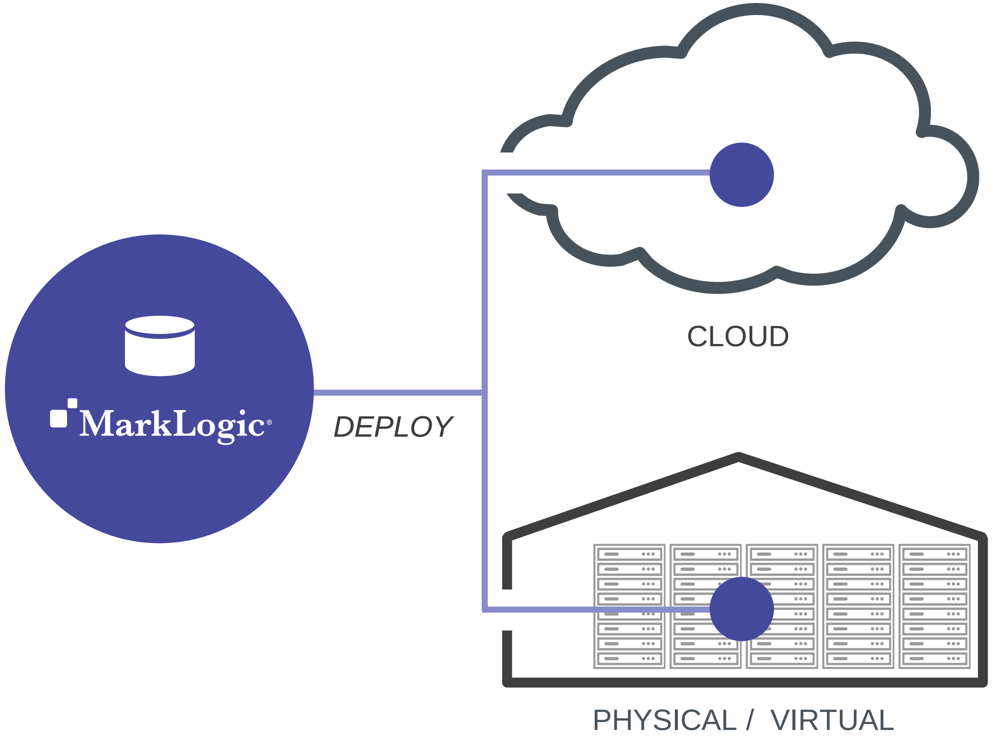

adoption
time
This is the Tech Adoption Curve, which shows the number of people adopting a given technology over time.
I know it will reach its pinnacle when my dad comes and talks to me about it...
So, son, could you install this Docker thing on my cell?
Daniel Stori {turnoff.us}

Source: http://turnoff.us/image/en/tech-adoption.png



CONTAINERIZED MARKLOGIC ENABLES

Cloud Agnostic and Platform Agnostic

- Write the application once, run it anywhere
- Deploy in the cloud
  - Private, hybrid, or public cloud
  - AWS, Azure, or Google Cloud
- Deploy on-premises

According to Docker:

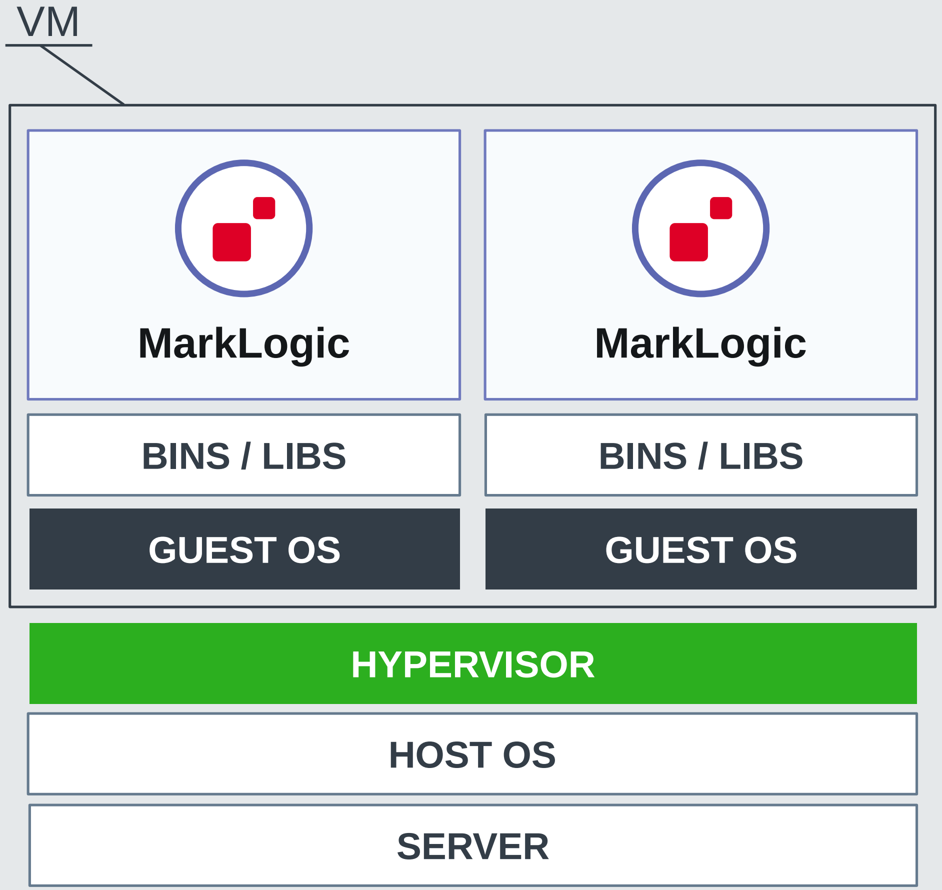
“A container image is a lightweight, stand-alone, executable package of a piece of software that includes everything needed to run it: code, runtime, system tools, system libraries, settings.”

Containers vs. Virtual Machines

- OS-level Virtualization vs. Hardware Virtualization
- Docker Engine vs. Guest OS + Hypervisor
- “Apartment vs. House”

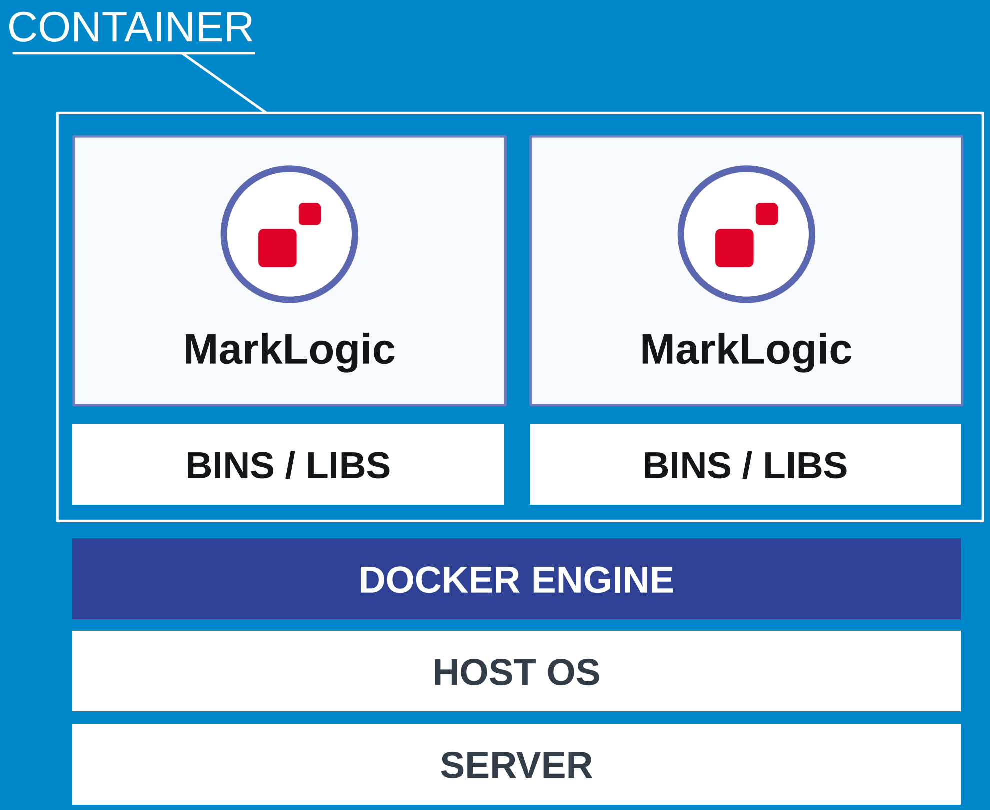
VIRTUAL MACHINES

True network separation • Mature technology

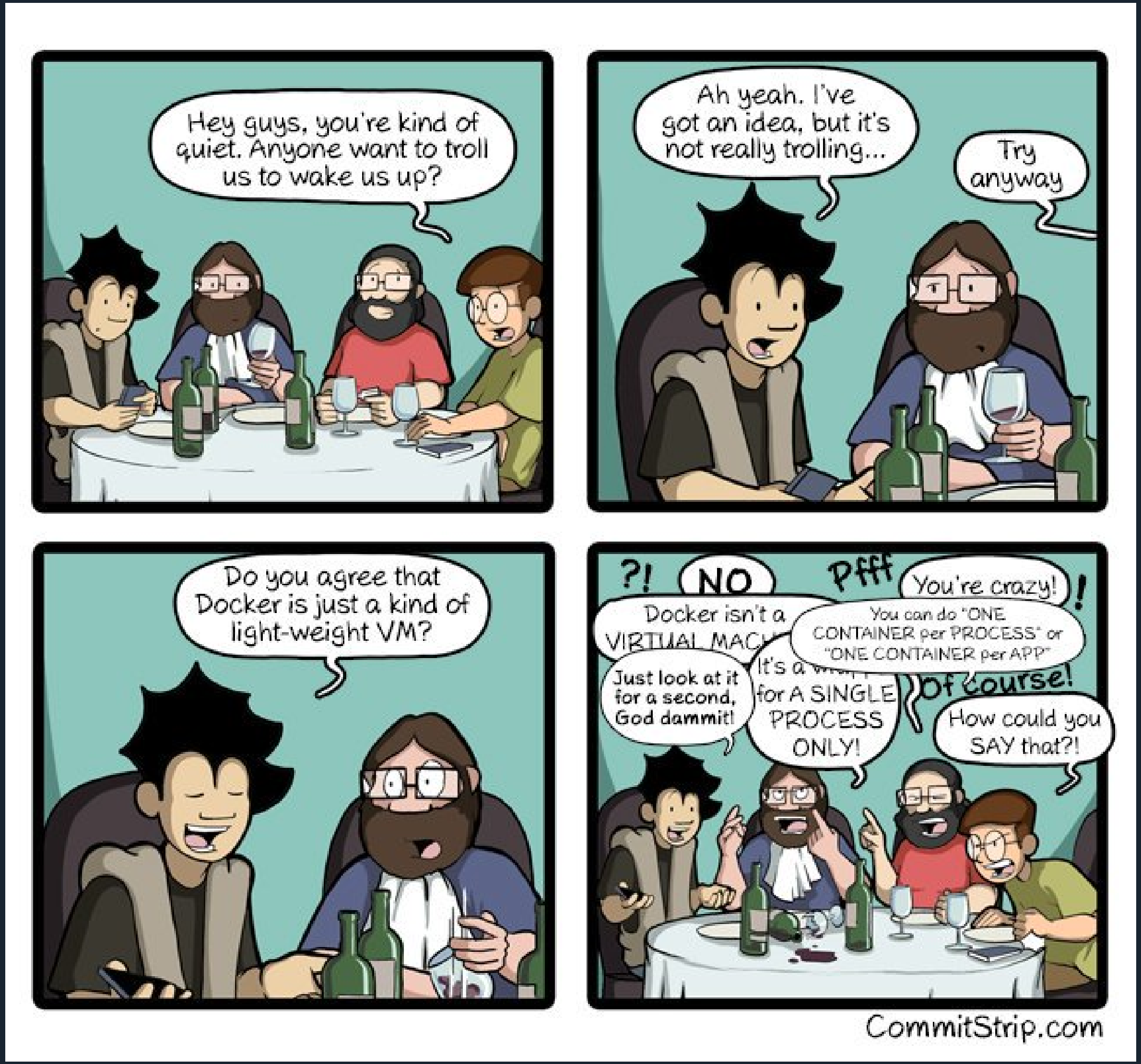


docker

Lightweight • Simple configuration • Reduced costs • Efficient resource consumption



MarkLogic


Hey guys, you're kind of quiet. Anyone want to troll us to wake us up?
Ah yeah. I've got an idea, but it's not really trolling...
Try anyway
Do you agree that Docker is just a kind of light-weight VM?
?!
NO
Pfff
You're crazy!
!
Docker isn't a VIRTUAL MAC
You can do "ONE CONTAINER per PROCESS" or "ONE CONTAINER per APP"
It's a
for A SINGLE PROCESS ONLY!
Of course!
Just look at it for a second, God dammit!
How could you SAY that?!
CommitStrip.com

Source: https://twitter.com/åcommitstrip/status/746407865485766657

Why MarkLogic in Containers?

MarkLogic in Containers

Portability

Shared among users and across platforms

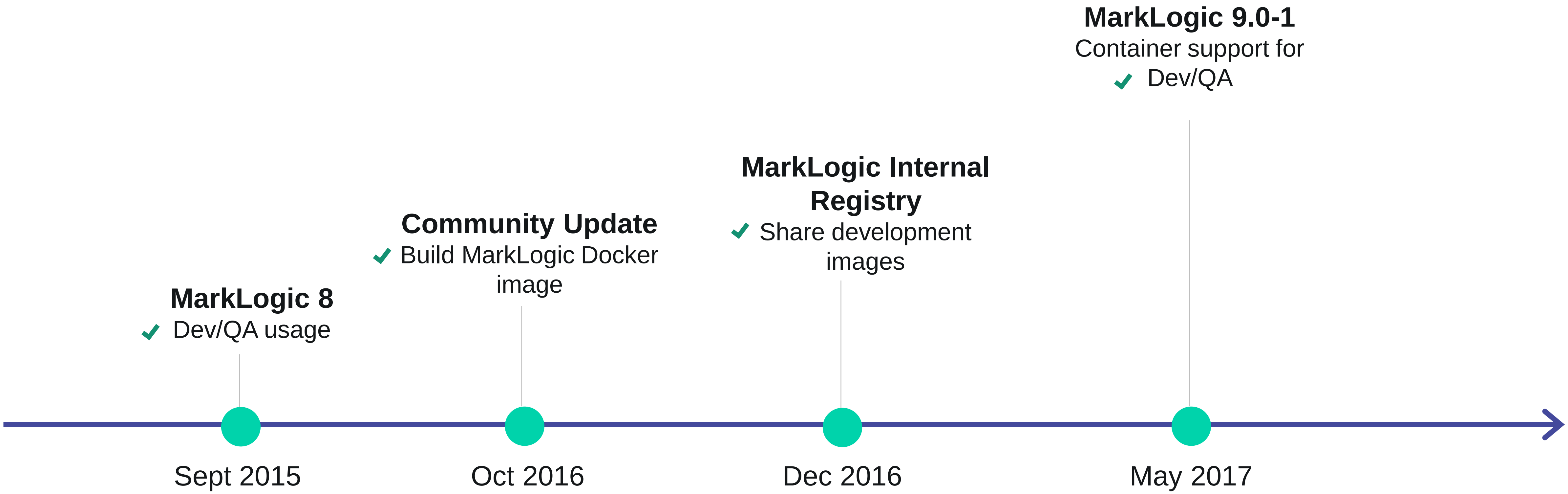
Simplicity

Lightweight and quick to start up

Speed

Rapid software development and smooth CI/CD Integration

MarkLogic in Containers



MarkLogic 8
✓ Dev/QA usage

Sept 2015

Community Update
✓ Build MarkLogic Docker image

Oct 2016

MarkLogic Internal Registry
✓ Share development images

Dec 2016

MarkLogic 9.0-1
Container support for
✓ Dev/QA

May 2017

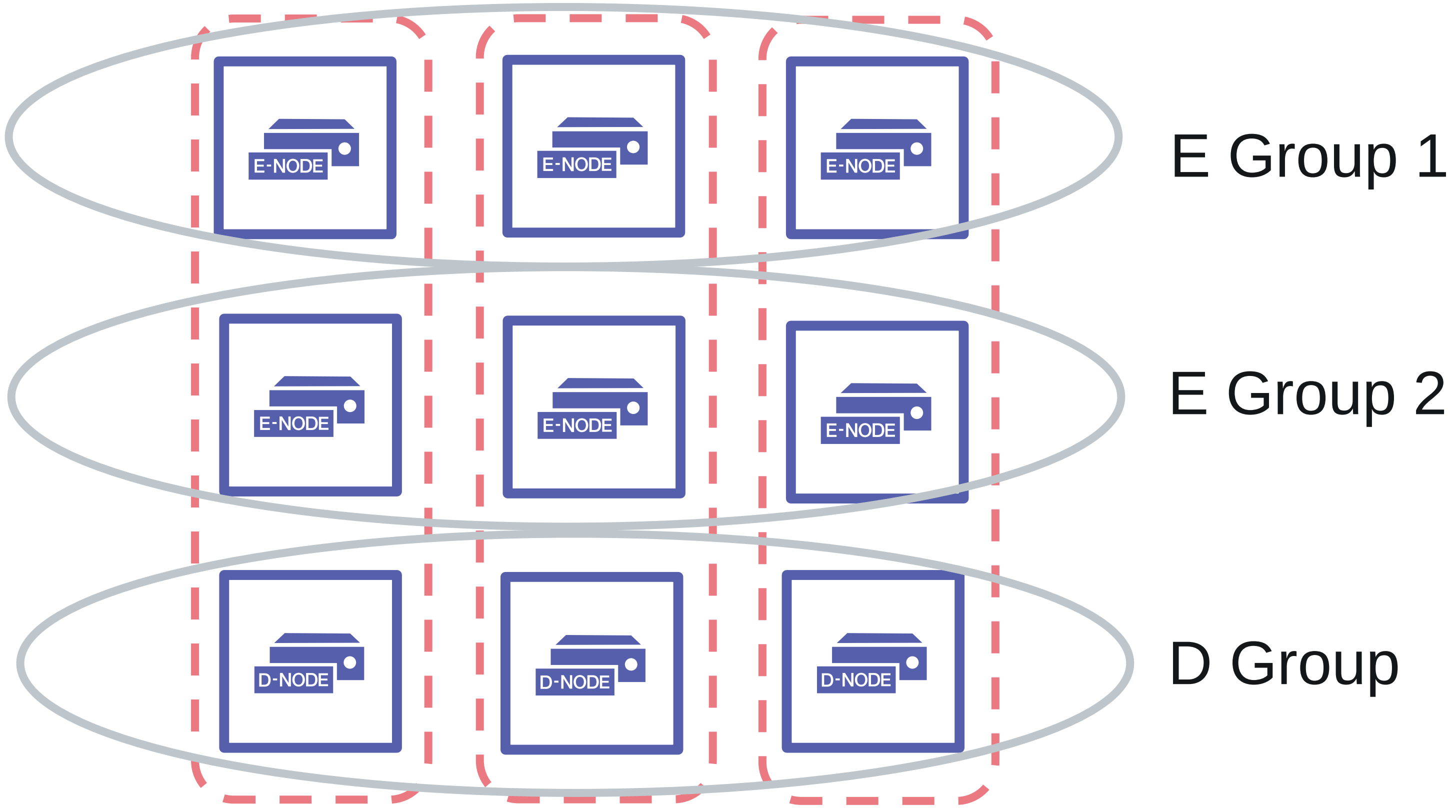
CLOUD NEUTRAL TO PLATFORM NEUTRAL

MarkLogic Supports Containers in Production

- Production support starting MarkLogic 9.0-5
- Extensive regression testing
- RHEL 7.4 Base OS + Overlay FS with NFS
- Performance testing versus virtual machines

WORKLOAD MANAGEMENT VIA CONTAINERS

MarkLogic E/D Node Separation

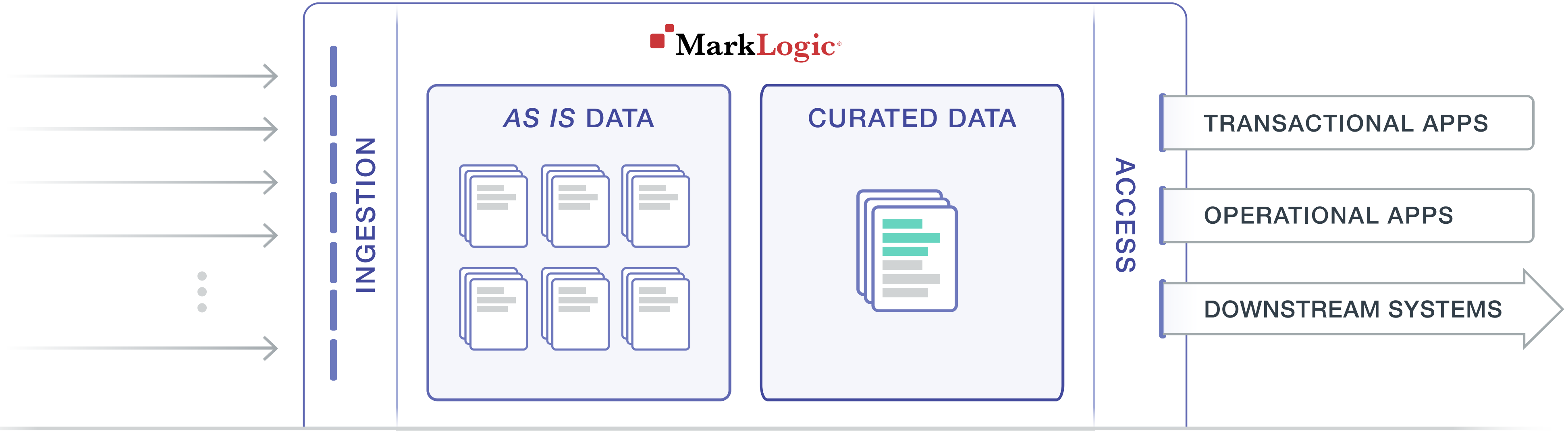


MarkLogic

DEVELOP VIA CONTAINERS

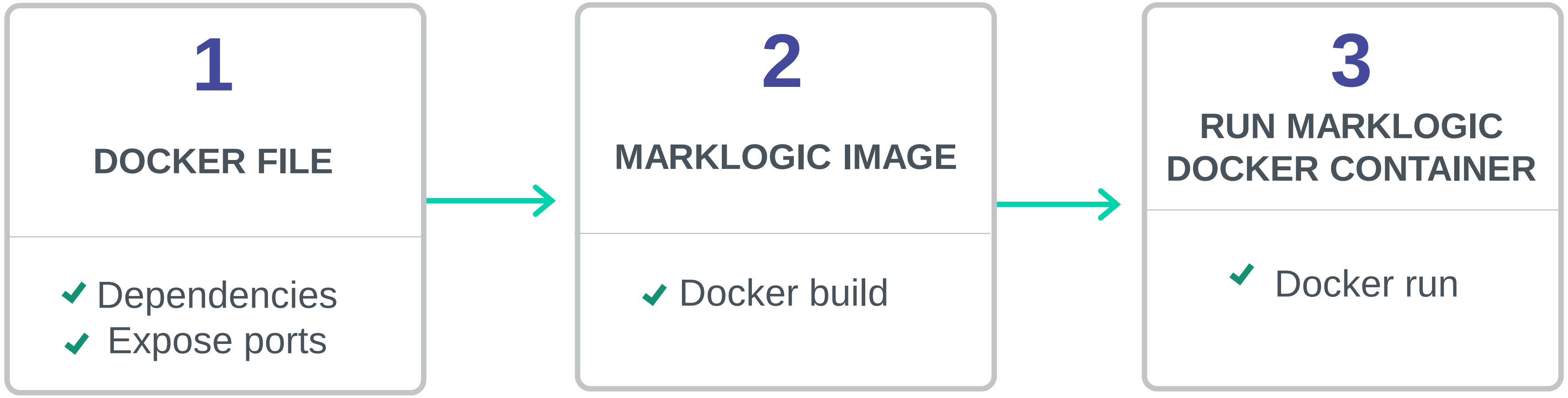
MarkLogic Data Hub Framework

- Quick start container image on private/public registry
  - Installation requirements: Java 8, Quick Start Data Set, Gradle, MLCP



DEVELOPING & TESTING MADE EASY

Setup MarkLogic Docker in 3 Easy Steps



1

DOCKER FILE

- ✓ Dependencies
- ✓ Expose ports

2

MARKLOGIC IMAGE

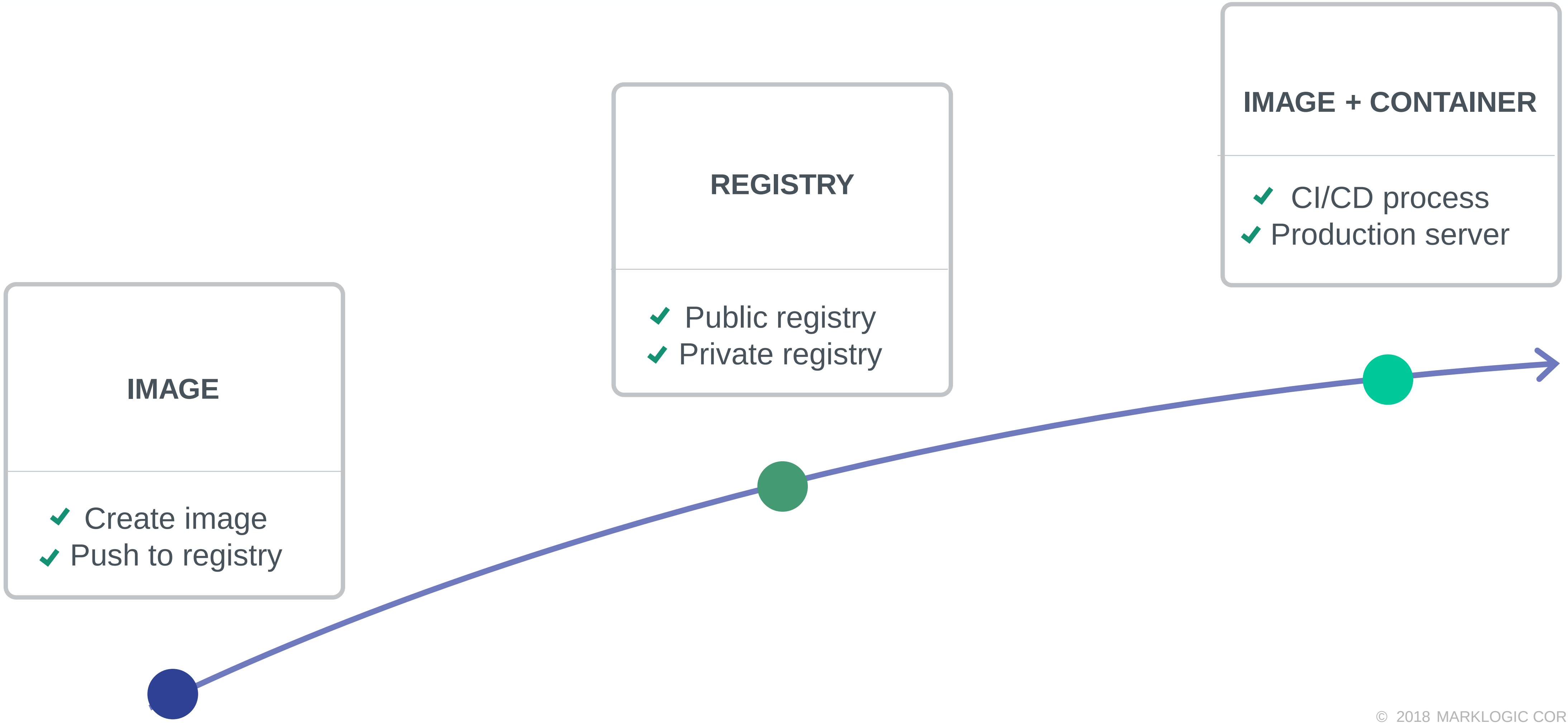
- ✓ Docker build

3

RUN MARKLOGIC DOCKER CONTAINER

- ✓ Docker run

Share and Deploy via Registry



IMAGE

- ✓ Create image
- ✓ Push to registry

REGISTRY

- ✓ Public registry
- ✓ Private registry

IMAGE + CONTAINER

- ✓ CI/CD process
- ✓ Production server

DEMO:

Containers from MarkLogic Private Registry

MarkLogic

MarkLogic in Kubernetes

WHY KUBERNETES?

Kubernetes is the Leading Orchestration Framework for Containers

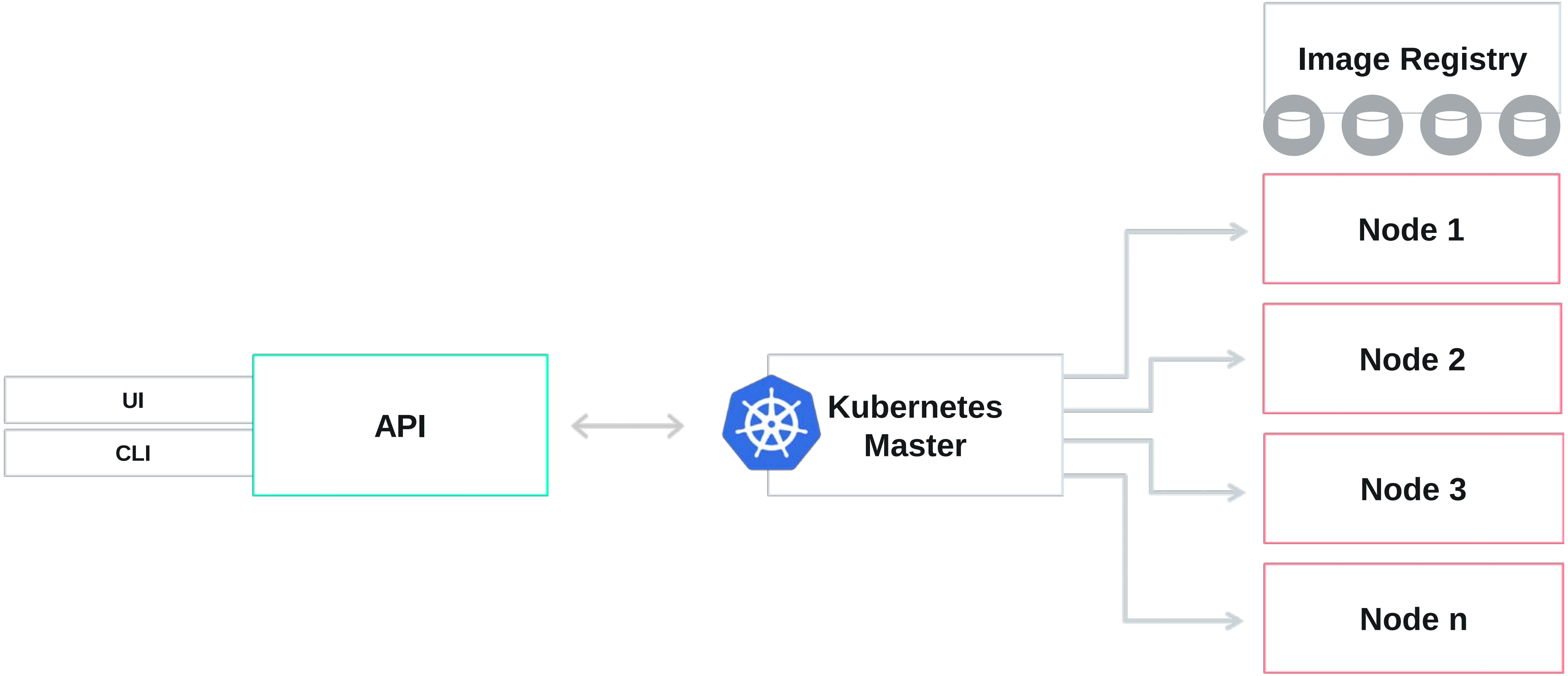
- Production-grade container orchestration
- Major cloud platforms support Kubernetes

Kubernetes Features

- Automatic binpacking
- Scalability
- High availability (self healing)
- Auto rollouts and rollbacks
- Service discovery and load balancing
- Storage orchestration

MarkLogic

Kubernetes Architecture



MarkLogic

Demo:
MarkLogic in Kubernetes

Vitaly Korelov, Staff QA Engineer

Minikube – Kubernetes on a Laptop

Lightweight on local machine

- Dependencies
  - Docker, private Docker registry, VirtualBox, Minikube, kubectl, & MarkLogic 9

Setup Components

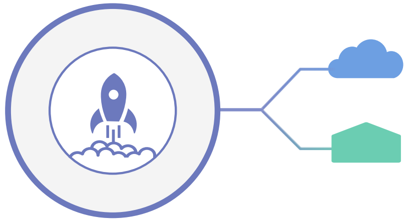
Lightweight on local machine

- MarkLogic Docker image with cluster configuration scripts
- Nginx Docker image with configuration scripts
  - Used as load balancer and replication controller
- Kubernetes configuration
  - Pod for MarkLogic
  - Service for pods
  - Nginx service

Summary

ENABLING MICROSERVICES ARCHITECTURE

MarkLogic in Containers

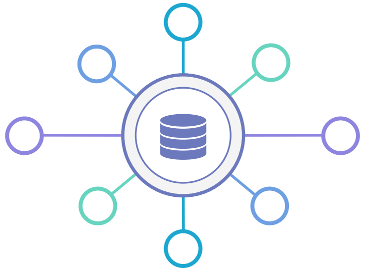


Platform Neutral

Write your app once, run it anywhere – in cloud and on-premises

Container Support in SDLC

Develop, test and deploy in production



Ecosystem Compatible

Proof-of-concept of MarkLogic cluster deployment in Kubernetes

Get Started

- **Build a MarkLogic Docker Container:** https://developer.marklogic.com/blog/building-a-marklogic-docker-container
- **Automate MarkLogic Docker Install:** http://developer.marklogic.com/blog/docker-marklogic-initialization
- **Deploy a MarkLogic Cluster in Kubernetes:** http://developer.marklogic.com/blog/docker-deploy-kubernetes

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Questions?