MesosCon
NORTH AMERICA

# Lessons Learned: Deploying Microservices Software Product in Customer Environments

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# Who's speaking?


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# Microservices are Cool

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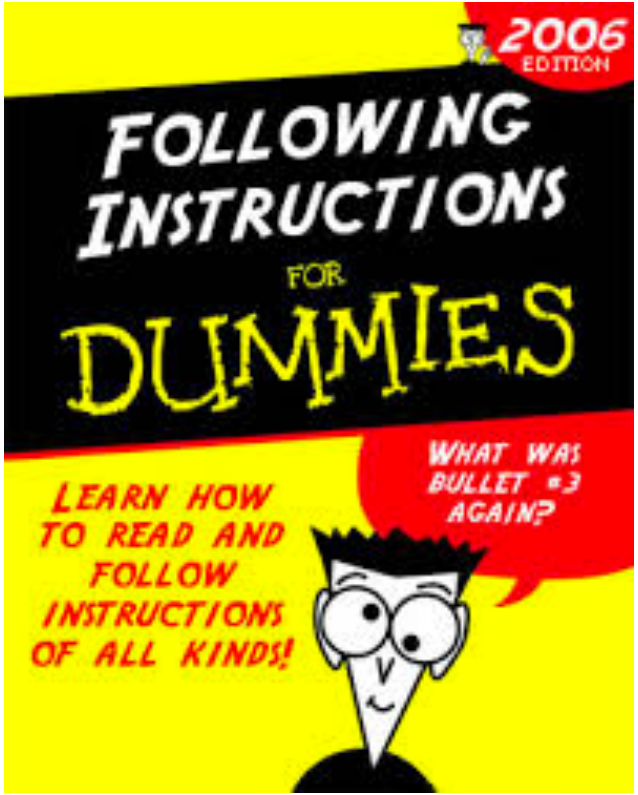
# But what about installation

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# A word on the difference between SaaS and On Prem


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# A tale of three products


A legacy (10 years now!) monolithic web application architecture written in Java deployed on premises at thousands of customers world-wide

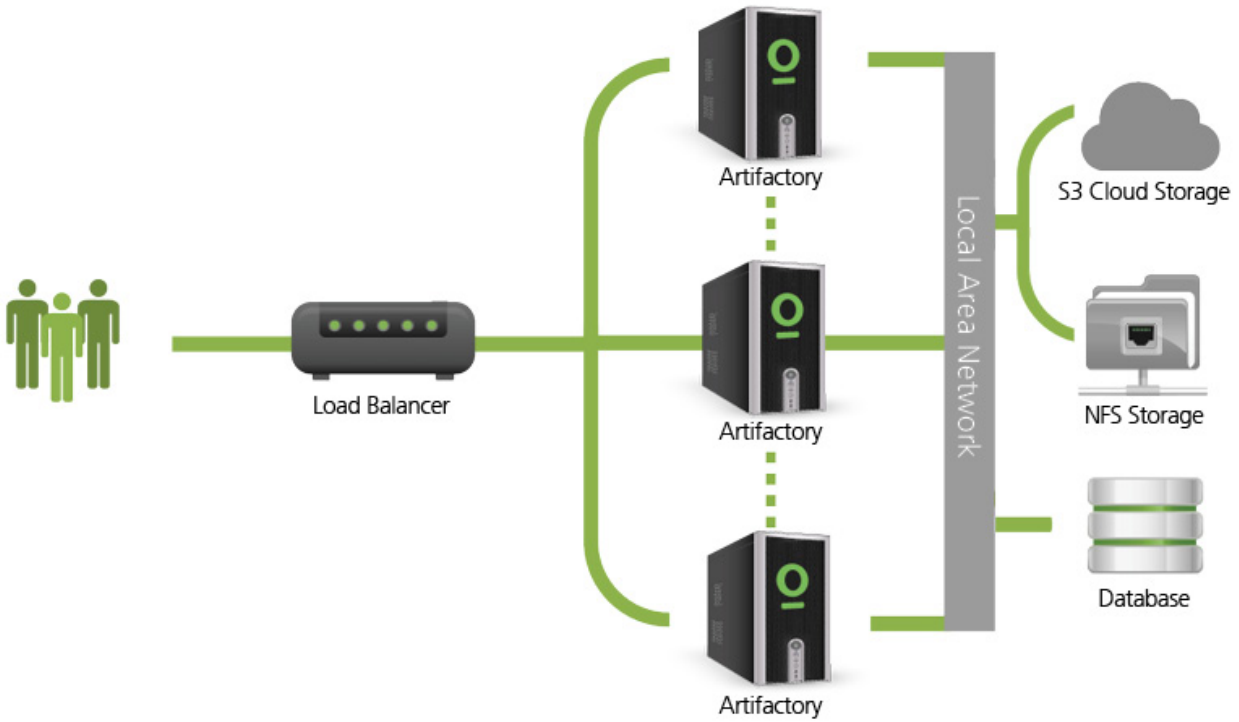

A java-based microservices architecture application designed for the cloud, operating for 5 years, transitioning in 2018 to be offered on premises. Hosts jcenter and homebrew, easily scales to billions of downloads a month


A greenfield project in 2016/2017, designed as an on-premises microservices architecture from the start.

# So what are we going to talk about?

- Discussion of the artifactory experience, what did we learn migrating a legacy monolith to cloud-native?
  - Major version upgrade was required to modify architecture
- Discussion of the xray experience. Microservices design on prem:  How did it go?
- Based on this what are we taking forward into the next one?

# A place to start: Artifactory HA



# A first step: VM orchestration

- Lesson:  Separation between the application layer, and the configuration layer.
- Example:  health check (/api/system/ping),
  - What is it: confirms artifactory web service, and connection to DB and filestore.  Best way to test
  - Problem:  It required an authenticated user
  - Solution: Make an anonymous version of this available

# VM orchestration

- The importance of startup scripts
- Issue:  Health check starts before application starts
- Solutions?
  - Complex script to try to prevent health check from initating until successful start
  - Just wait long enough

# A first step: Early containerization

- Install the artifactory RPM in a container and we're done, right?

- What about HA?
  - Different directory structure!
  - Take default image and "customize"
  - NFS requirement?

# The first Mesos implementation

- First container based self-healing orchestration of Artifactory
  - Thank you mesos team for much assistance!
  - Able to leverage existing mesos capabilities for most things
  - Able to leverage mesos-based DB services
- Issues:
  - User MUST supply an external NFS mount
  - License management required an extensive hack

# Enter Artifactory 5!

- Artifactory 5 objective was to take lessons learned from previous cloud-native work
- First cloud-native ready version of artifactory.
- Major changes:
  - Config for HA no longer requires shared storage
  - Creates mechanism for node cross-talk to share config and cached artifacts
  - No more NFS!
  - License management for clusters shifted to the application layer

# Where we are today?

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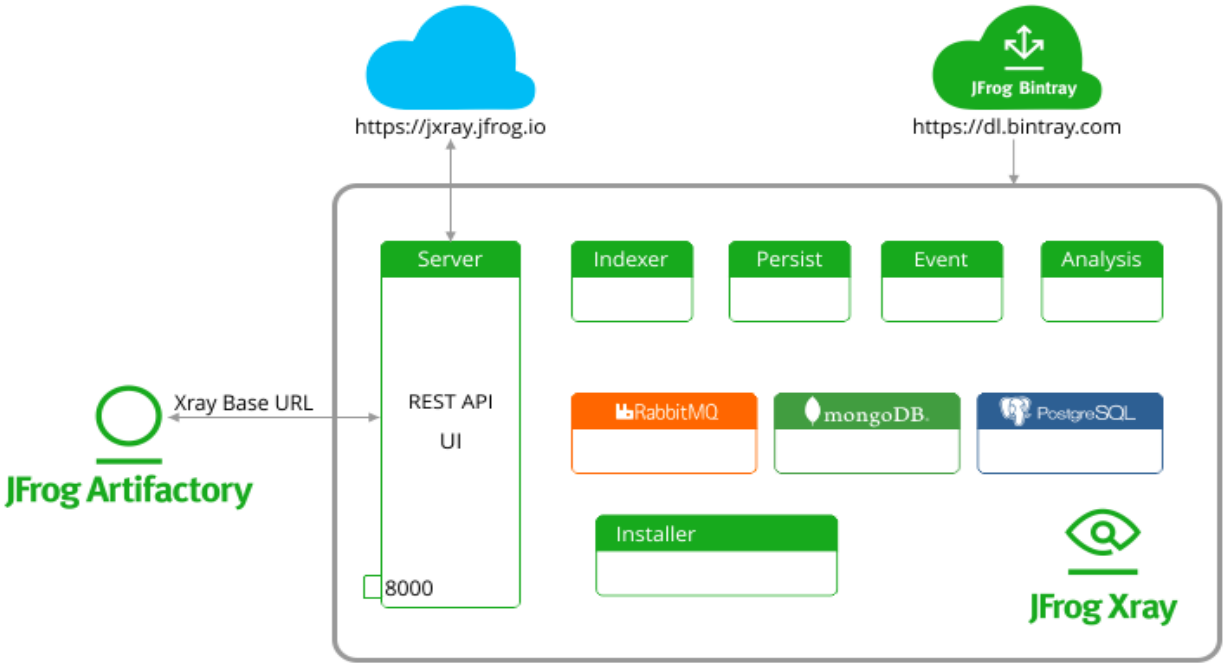
- Cloud-native deployments of artifactory for Mesos, Kubernetes, Docker Swarm
- Broke the first microservice out of the monolith into a second web-application service

# So what about xray? Back in time.



# Lesson 1:
# Don’t overestimate the customer

- We released Xray with a cool docker-in-docker install script and as a set of docker containers.
- First request from customers:  “Do you have an RPM install of that?”

# Lesson 2:
# Start like you mean to go on

- System was architected for enterprise/HA/ etc.
- For the 1.0 release, we built/test it only with the default architecture of all containers created on one server
- It took most of a year to find all the issues this caused for us to enable HA and horizontal scalability
- DevOps!

# Lesson 3: Flexibility!

- Nearly all requests made have been to give customers more flexibility on install
  - Ability to specify custom paths
  - Bring-your-own infrastructure
  - Source of docker containers

# Lesson 4:
# What about startup scripts?

- Startup order:
  - Microservices are stateless
  - But they do have dependencies in order to function
  - Xray startup script explicitly checks dependencies and introduces a startup order
  - Makes it easier for a customer less familiar with microservices architectures to understand startup process.

# Moving forward:  Bintray on Premises & JFrog Platform

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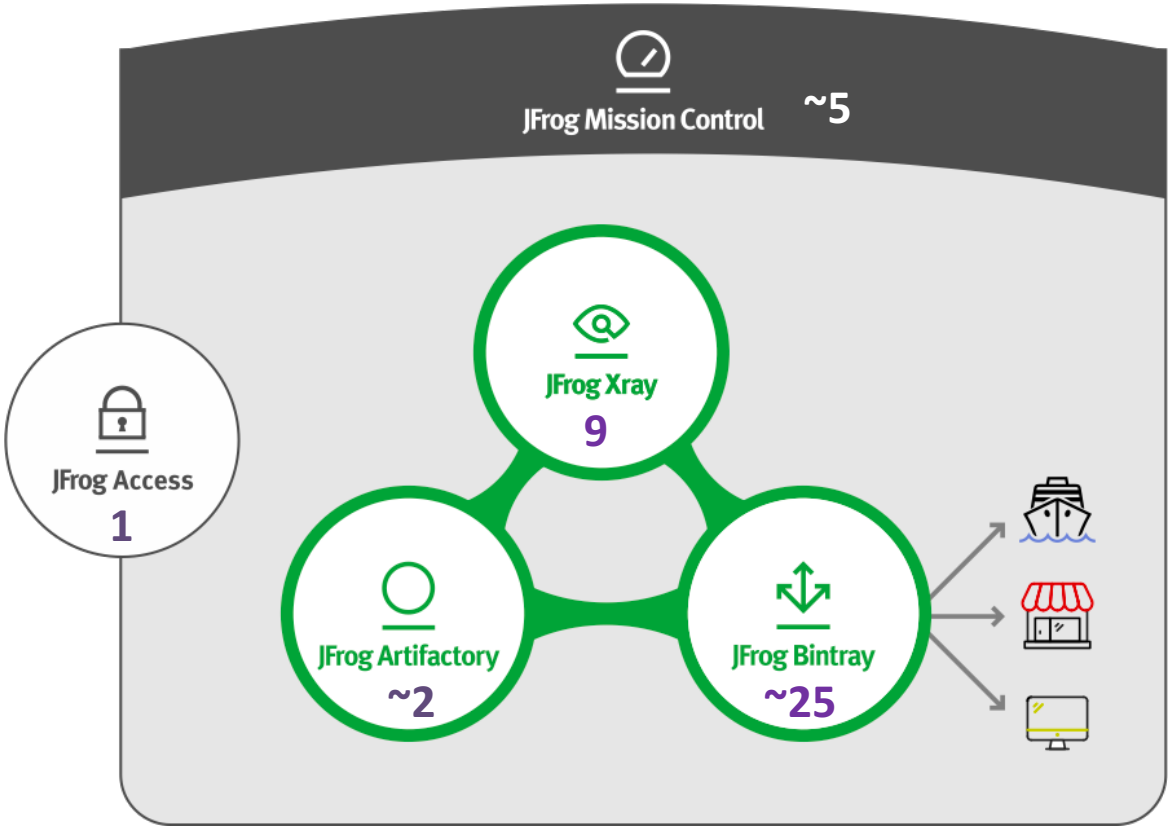
# What does platform look like?



# What are we doing with this one?

- Simple is better
  - Consolidate infrastructure services across products
  - Use small services for scalability & flexibility, but try to keep the total number down for on-premises
- Start with the enterprise architecture deployment
  - If you don't honor scalability/flexibility at the beginning its harder later
- Start with a container-orchestration implementation.  Understand we can't end there.


# Most Important Takeaway

- DevOps!
  - Developers and Packaging teams need to be working on deployment/packaging problems from the beginning!

# Thank You!

- Q&A

- By the way, we're hiring!