

Advanced Canary Deployments with Spinnaker

DevOps Architect @ OpsMx

What is Canary Deployment?

A deployment technique to introduce software changes in production by slowly rolling out code change(s) to a small subset of users before making it available to all users

Canary Deployment in Simple Stages

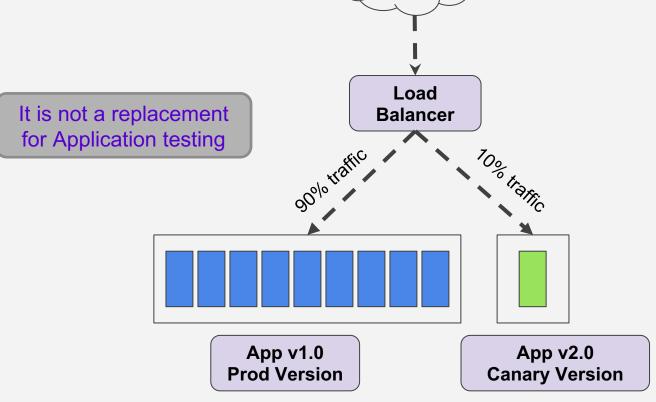
Deploy a new version to a small set of servers

Minimal live traffic to new instances

Pause & Monitor

Good? Continue to repeat until End

Bad? Revert and Exit



Internet



Advantages of Automated Canary Deployment

Enable live upgrade safely and frequently with confidence

Confidence to experiment new features

Catches errors and exits early

Saves Engineers' time

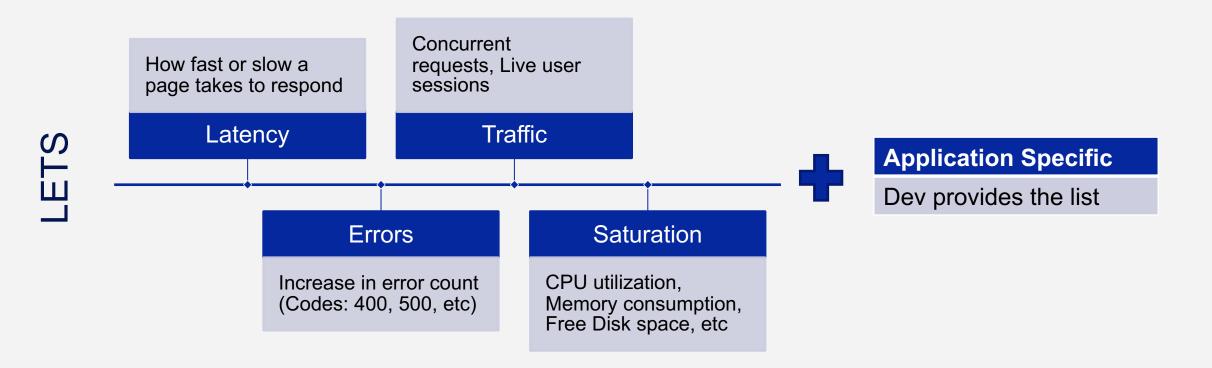
Easy rollback with minimal impact to Production

Reduced cost



Metrics for Canary Analysis

What makes your application healthy?





CDF

Canary Deployment using Spinnaker



Spinnaker and Kayenta



Spinnaker is a powerful open-source continuous delivery platform with flexible pipeline management system capable of deploying to the major cloud providers

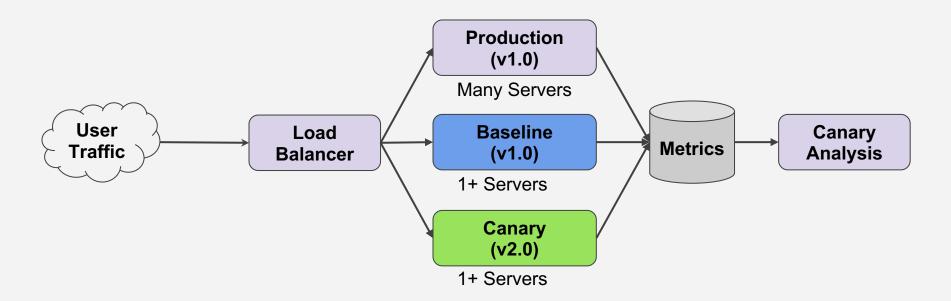
Kayenta

Automated Canary Analysis (ACA) Platform

- Retrieves metrics from metrics store
 (Prometheus, DataDog, SignalFx, Stackdriver, etc)
- Performs AB style statistical testing
- Judges if Canary is good



Spinnaker - Canary Deployment





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How does Canary Analysis work?

Metrics Collection

- Metrics -Baseline & Canary
- Stored in TSD
- Tags and annotations added to metrics

Data Validation

- Ensures Data availability
- NODATA label -Missing data

Data Cleaning

- Handle missing values
- Replace with Zero or remove

Metrics Comparison

- Compare Baseline and Canary metrics
- Classify result : Pass, High, or Low

Score Computation

- Compute score
- Score tells how similar Canary with Baseline



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Prepare Infra for Canary Deployment

Prometheus

- Ensure Prometheus is available
- Ensure Prometheus can scrape metricsfrom App namespace(s)

Spinnaker

- Enable Canary feature in Spinnaker
- Integrate Prometheus metrics source
- Configure storage for canary configs
 and metrics report



Canary Deployment – Guided Path

Instument App with prometheus health metrics

Ensure Prometheus scrape target for your App

Requirements

Deploy Baseline & Canary to Production Minimal network traffic to Baseline and Canary

App Canary Deployment

Canary failed? Roll-back
Canary passed? Promote to Prod
Tear-down Baseline and Canary
deployments & Exit

Code Promotion / Rollback?

App Canary Config

Enable App Canary config (one time config)

Start with a small number of critical metrics Gradually add more metrics

Canary Analysis

Configure Baseline and Canary sources
Perform Canary Analysis
Fail or Pass classification



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Demo - Canary Deployment







Thank you!

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