



Enabling Developers with Open Source

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Agenda

Introduction

Background

What is Developer Enablement?

Cloud, Containers, Canary, Continuous Delivery

Hello Capstan

What is it?

What do I use it for?

How does it work?

Demonstration

Use A Capstan Created Environment

How can I modify?

Questions

Business Drivers for Developer Enablement

Maximize Creative Hours to work on:

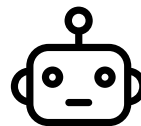
**User
Experiences**



**Improved
Features**



**Smarter
AI/ML**



Not on...

Why did my build break?

Which server did it deploy to?

Business Drivers for Developer Enablement

You pay for “Value Delivery”

Customers
(External/Internal)



**Open Source
Community**



**Greater Business
Ecosystem**



No one will accept...

“Our deployment process is holding up releases to customers”

Hurdles

**Getting Started with
Containerized Apps?**

Moving to the cloud?

**Release all day, every
day?**

Time to bootstrap
containerized app
experience

Existing Continuous
Delivery Skill Deficit

How to “Solve”
Operational complexity

Existing Automation =
Rube Goldberg
Fragility

Developers may not
have extensive cloud
experience

Where to start
automating?

How do I know that
software is “good” to
release?

What is Developer Enablement?

Enable developers to execute as many facets of the creative process independently and on-demand.

Cloud capable with the latest software packaging technology (containers) that can perform automated canary analysis in a continuous, repeatable, duplicatable way.

Cloud and Containers

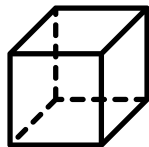


Cloud

Any IaaS that provides elastic behavior transparently to the creator.

Provides a place to run what you created without needing to know all inherent machinations

The IaaS experience could be a PaaS experience.



Containers (with orchestration)

Runtime environment where the lifecycle is managed without the developer

Packaging of the app/feature/service, independent of the IaaS

Packaging on the local development environment is the same as in the enterprise runtime

Canary

What are canary releases?

A change to a small subset of **production** users to gauge the fitness of the software before release to all customers.

Ability to execute *one last point of quality control* in **production** before fully committing to the new code/feature/hotfix/etc.

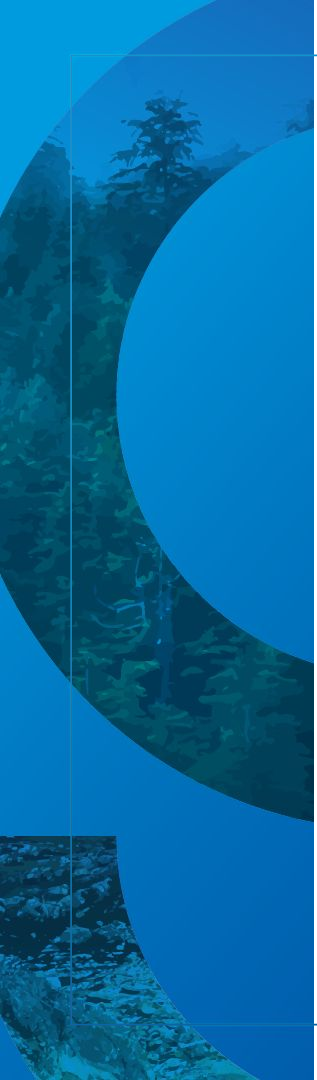
Canary is not new, but **Generic Automated Canary Analysis** is new(er) and uses statistical methods to **automatically** make this fitness determination.

Continuous Delivery/Deployment

Push the best, all day every day

Continuous Delivery is the orchestrated manifestation about how software is delivered within an organization regardless of whatever SDLC is followed.

With ***Continuous Deployment***, this release occurs **without** human intervention



***...in a lean, post-agile, software company,
Continuous Delivery offers a possibility to
improve the development process, and
adopting it is beneficial when aiming for a
development culture that can fluently move
to new business directions.***

[Marko Leppänen et Al. Towards post-agile development practices through productized development infrastructure.](#)

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Capstan

<https://github.com/kenzanlabs/capstan>

Capstan

Kenzan's new open source solution

Provision disposable containerized CI/CD environment in minutes

Github / Kenzan Labs / capstan



Technologies

Terraform

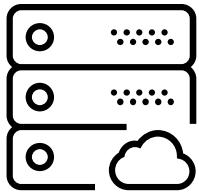
Cloud SDK

Spinnaker

IAAS Provides

Kubernetes

Capstan



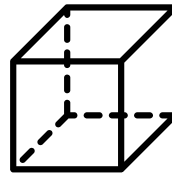
**Infrastructure as
Code (IaC)**



**Explicit display of
tool usage and
configurations**



**Immutable
Infrastructure**



Container focus

Capstan



Developer Acceleration

Need to get your developers quickly aquantited to developing containerized applications?

No longer burdened with training developers on how to deploy to Kubernetes.

If you can push your container into a supported repository and use Spinnaker than you can use Capstan.

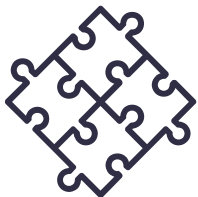


Developer Sandbox

Need a play place? Need to deliver apps that also interact with KubeFlow?

With Spinnaker you can push apps into a Kubernetes Cluster that also has KubeFlow deployed.

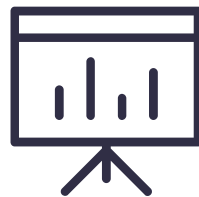
Capstan



Illustrate Bootstrapping

*Trying to put together
infrastructure-as-code, a container
platform, and software delivery
platform?*

Capstan provides a reference
implementation that your organization can
bootstrap from.



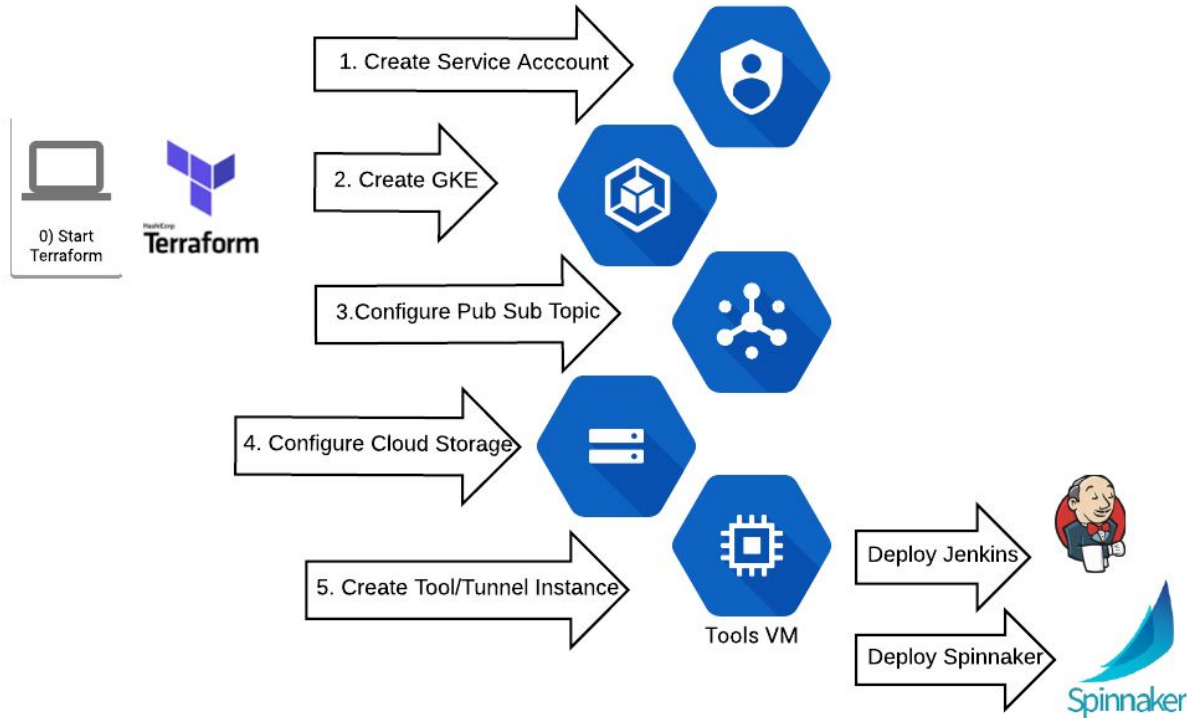
Platform Ops Training

*How do I operate my platform in the
cloud?*

*How do I perform IaaS changes or
Kubernetes upgrades?*

Capstan provides a reference architecture
for hosting containerized applications.

Capstan



Capstan

How does it work?

In Google Cloud...

1. Setup Trial Account
2. Create GCP Project
3. Create & Download Service Account JSON

On Your Workstation

1. Install the Basics, SDK & Kube Components (optional)
2. Clone Github / Kenzan Labs / Github
3. Copy Service Account JSON as

```
$ git clone
$ cd capstan
$ git checkout 2018.q3.beta.gcp
$ cp ~/Downloads/<service_account>*.json \
    gcp/terraform/gcp-account.json
```
4. ...other steps in GCP Readme

Validate your GCP project

Connectivity

To make sure we don't stumble into problems later, you need to perform the following:

1. Create a [Service account](#) with 'role/owner' for Terraform. Call it `terraform-admin` (or anything you want)
 - i. If you are presented with the option to generate a JSON key file do and save it for later.
2. Create a micro instance in `us-central1-a` with the service account `terraform-admin` (or whatever you named it)
3. Now leave your browser and open a terminal window
4. Perform a [gcloud init](#) if you have not done so as part of installing gcloud
 - i. Make sure your environment is referencing the current project (via `gcloud info`)
5. From your laptop perform a `gcloud ssh` into said instance. You can get the full `gcloud` command by clicking the arrow next to the SSH button for the instance.
 - i. This is to check connectivity between your laptop to GCP in a manner similar to what terraform does

If everything happened without issue then we are good. You no longer need this test instance. You can delete it and the service account to set-up terraform.

Enable Google Project Features

After verifying connectivity, we need to enable services/api endpoints for terraform.

Using the terminal window where you just attempted `gcloud ssh` perform the following commands

1. `gcloud services enable container.googleapis.com`
2. `gcloud services enable iam.googleapis.com`

Plan: 9 to add, 0 to change, 0 to destroy.

Do you want to perform these actions?

Terraform will perform the actions described above.

Only 'yes' will be accepted to approve.

Enter a value: yes

random_integer.spin_bucket: Creating...

max: "" => "99999"

min: "" => "1"

result: "" => "<computed>"

random_integer.spin_bucket: Creation complete after 0s (ID: 89144)

google_service_account.halyard_toolsacct: Creating...

account_id: "" => "halyard-tunnel-tools"

display_name: "" => "halyard-tunnel-tools"

email: "" => "<computed>"

name: "" => "<computed>"

project: "" => "<computed>"

unique_id: "" => "<computed>"

google_service_account.spinnaker: Creating...

account_id: "" => "gcp-spinnaker"

display_name: "" => "gcp-spinnaker"

email: "" => "<computed>"

name: "" => "<computed>"

project: "" => "<computed>"

unique_id: "" => "<computed>"

google_pubsub_topic.gcr_event_stream: Creating...

name: "" => "gcr"

project: "" => "<computed>"

unnel (remote-exec): Success

unnel (remote-exec): + Run `hal deploy connect` to connect to Spinnaker.

unnel (remote-exec): =====

unnel (remote-exec): - Hopefully Spinnaker Deployed -

unnel (remote-exec): =====

unnel (remote-exec): *****

unnel: Creation complete after 16m0s (ID: halyard-tunnel)

ed, 0 changed, 0 destroyed.

te-exec): Success

te-exec): + Run `hal deploy connect` to connect to Spinnaker.

te-exec): =====

te-exec): - Hopefully Spinnaker Deployed -

te-exec): =====

te-exec): *****

ition complete after 14m45s (ID: halyard-tunnel)

Apply complete! Resources: 9 added, 0 changed, 0 destroyed.

parker01-mac:terraform parker\$

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Demo

Using Capstan

Delivery Environments

Spinnaker

Jenkins

Kubernetes

Using

**Look at existing
pipeline:**

Simple

Canary

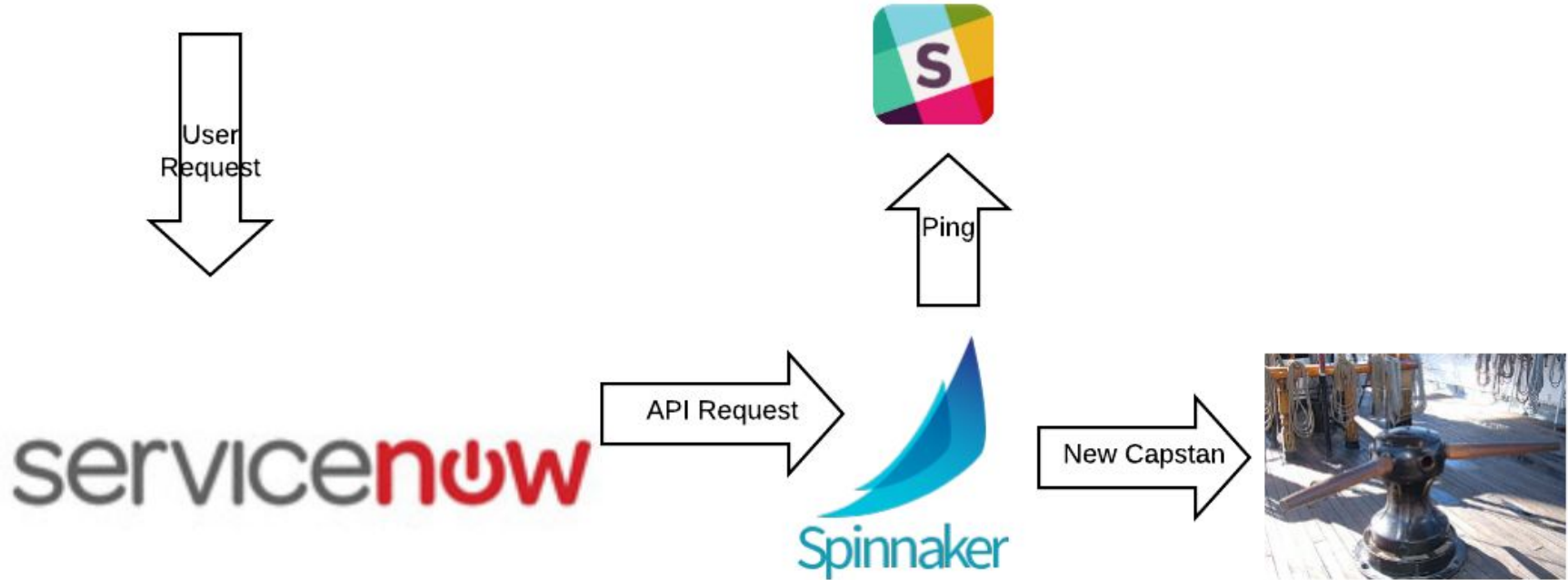
Build One

Being Open Source

**How can you change
this?**

**Service Delivery with
ITSM**

Open Source





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