Kubetest2

Because now you can test Kubernetes on your bespoke cloud too!

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👋 Hello OSS!

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Introduction

- **Kubetest2** is a framework for deploying Kubernetes clusters and running end-to-end tests against them.
  - It is intended to be the next significant iteration of Kubetest
- It manages:
  - cluster configuration
  - e2e testing and log collection
  - test environment disposal
- **Kubetest2** is effectively split into three independent executables:
  - **kubetest2**: discovers and invokes deployers and testers in PATH
  - **kubetest2-DEPLOYER**: manages the lifecycle of a Kubernetes cluster
  - **kubetest2-tester-TESTER**: tests a Kubernetes cluster

Credits: Kubernetes Testing with KIND and Kubetest2 by Benjamin Elder, Amit Watve

- Typical flow is broken down into multiple phases
  - Build
  - Up
  - Test
  - Down
- Command line invocation:
  - kubetest2 <deployer-name> —up —down —test <tester> <test-arguments>
  - Example: upstream CNCF kubernetes test against a GKE cluster
    - kubetest2 gke —up —down —test ginkgo — —focus-regex “\[Conformance\]”

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Kubetest2 progression from Kubetest and why this iteration was necessary?

- Kubetest(v1) is the framework that kubernetes project currently use for continuous integration testing or CI and runs about thousands of jobs, daily.
    - Single Binary - encompassing all different test environment & scenarios used in the Kubernetes CI
    - Evolved organically from bunch of legacy scripts
- Kubetest2 was created with the primary goals:
    - To move away from legacy dependencies
    - To build something that is easier & extensible/pluggable
- Kubetest was deprecated in favor of Kubetest2 on July 14, 2020, and was placed in maintenance mode
- The intent behind this new design is:
    - minimize coupling between deployers and testers
    - encourage implementation of new deployers and testers out-of-tree
    - keep dependencies / surface area of kubetest2 small

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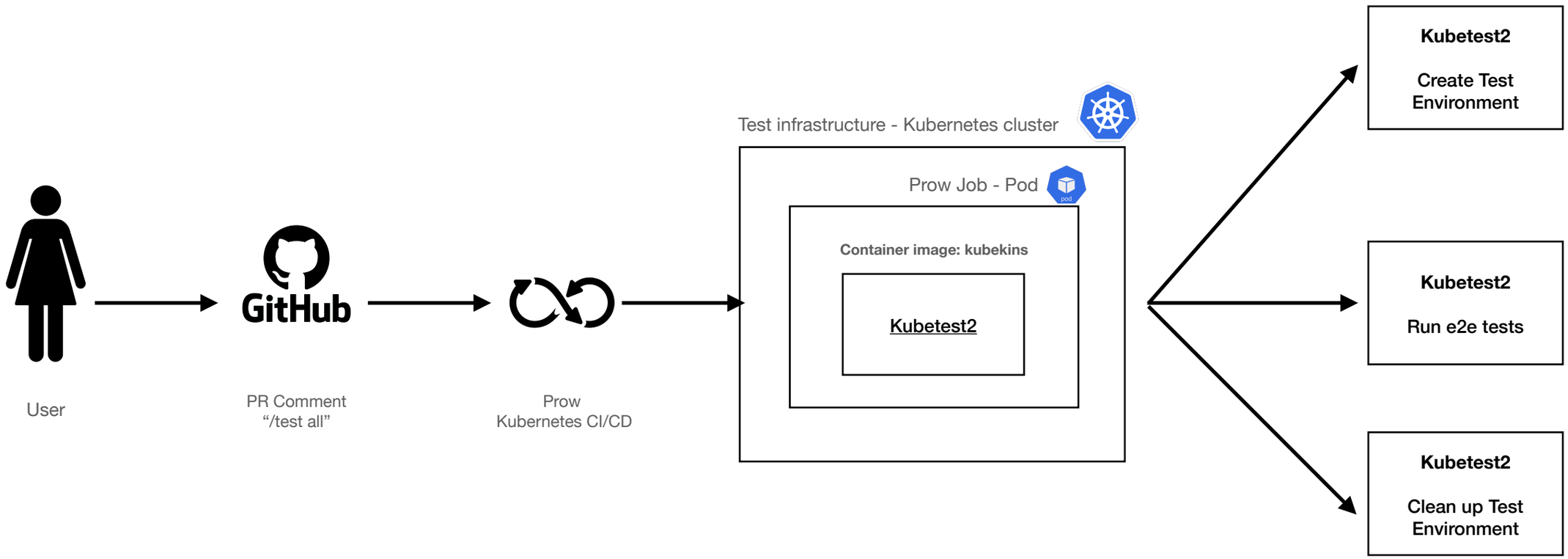
How the upstream Kubernetes project integrates kubetest2 with Prow



Primary features

Of Kubetest2

- Consistent cluster lifecycle
- Decoupled implementation of deployers, and plug-&-play testers
- Reproducible CI & local testing experience
- Support for Boskos

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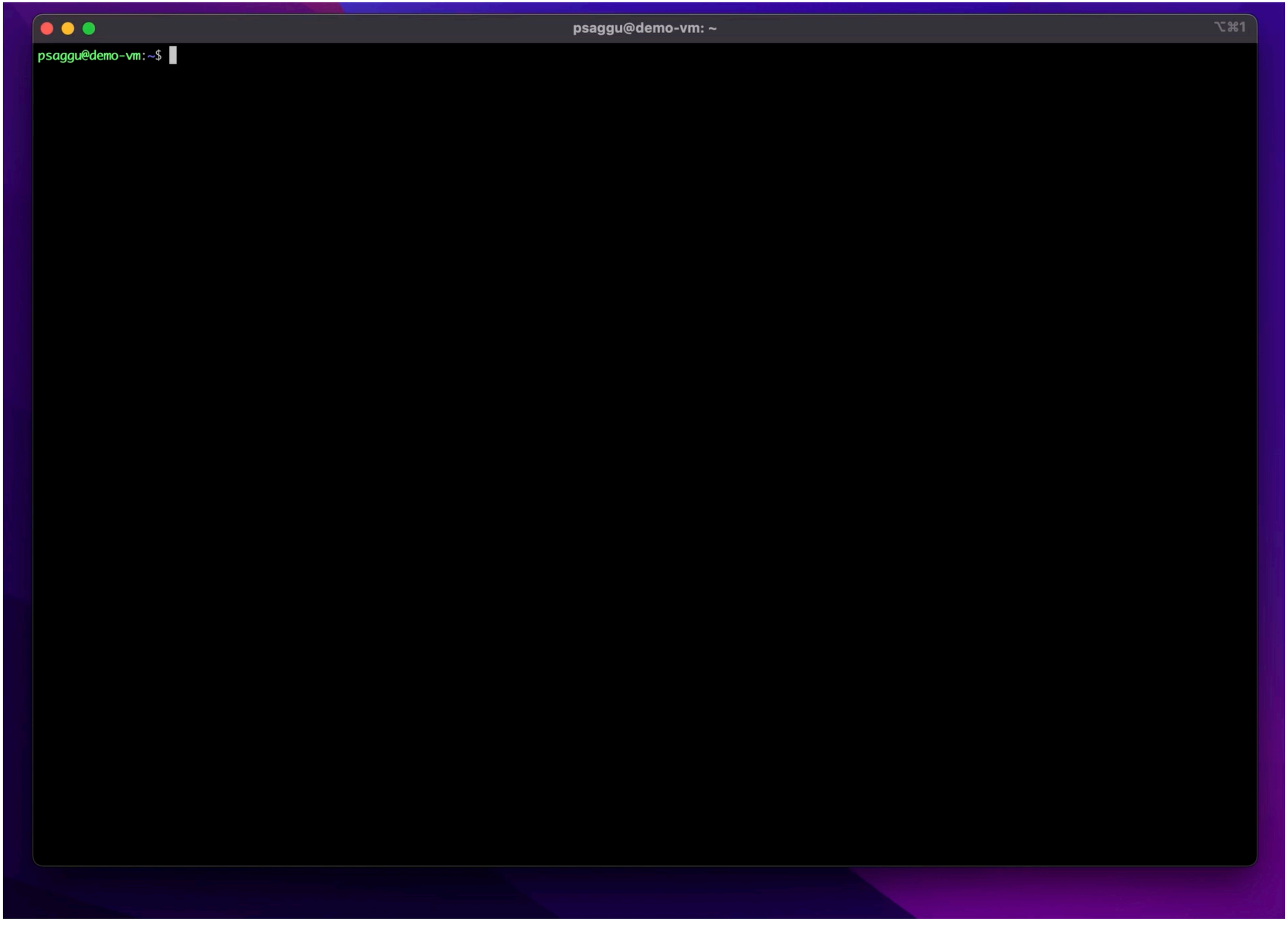
Demo

Writing custom deployer for Kubetest2

```go
// Deployer defines the interface between kubetest and a deployer
//
// If any returned error meets the:
// sigs.k8s.io/kubetest2/pkg/metadata.JUnitError
// interface, then this metadata will be pulled out when writing out the results
type Deployer interface {
        // Up should provision a new cluster for testing
        Up() error
        // Down should tear down the test cluster if any
        Down() error
        // IsUp should return true if a test cluster is successfully provisioned
        IsUp() (up bool, err error)
        // DumpClusterLogs should export logs from the cluster. It may be called
        // multiple times. Options for this should come from New(...)
        DumpClusterLogs() error
        // Build should build kubernetes and package it in whatever format
        // the deployer consumes
        Build() error
}
```

Ref: https://github.com/kubernetes-sigs/kubetest2/blob/master/pkg/types/types.go


psaggu@demo-vm: ~
⌥⌘1
psaggu@demo-vm:~$

Additionally…

Some Good News

- As of 27 days ago, there's an official out-of-tree implementation of kubetest2-aks deployer available as well:
  - https://github.com/kubernetes-sigs/cloud-provider-azure/tree/master/kubetest2-aks

👋 Thank you!

- Slides & Demo: github.com/Priyankasaggu11929/oss-europe-2022
- Blog: psaggu.com
- Kubernetes Slack: @psaggu
- Twitter: @_psaggu
- Project links:
  - https://github.com/kubernetes-sigs/kubetest2
  - https://github.com/kubernetes/community/tree/master/sig-testing

QnA