
KubeCon
CloudNativeCon
Europe 2018
Using *kubectl* to run e2e tests
@openebs @amitnist @y_udaykiran

Agenda

- Reflections on our e2e journey
- Our thesis on e2e
- Litmus - solution that implements above thesis

Accelerating agility

Freeing data management from its traditional constraints.

Leading storage through a transition to microservices, open source & SaaS future.

Sponsors of the OpenEBS project.

How do you e2e?

@satyamz (k8s developer @openebs)

- I write e2e that verifies my feature
- Make use of Minikube, kubectl & Helm
- Upload these e2e specs/yamls to github

How do you e2e? contd...

@swarna (QA engineer @openebs)

- I write e2e specs that can be triggered from CI/CD pipeline.
- Ansible & Jenkins are my handy tools.
- These keep running continuously for a week & submit the results i.e. success or failure

Further observations

- Should run on most on these
  - GKE, Azure, AWS & Bare Metal
- Get metrics (e.g. time taken) along with status
- Send metrics to external tools for visualization
- Ability to verify the sprint features
- Check the progress of a sprint via e2e results

Did it work?

Did it work?

- Did it work?
  - Did all the e2e cases pass?

Did it work?

- ~~Did it work?~~
  - ~~Did all the e2e cases pass?~~

Vs.

- Did it help our users?

Perceptions shift from my e2e to our e2e...

Involving everyone in the process !!!

Re-Imagining e2e

- Does it answer user queries?
- Can it bring in transparency?
- Does it enable users to participate in e2e?
- Alternatively, can we participate in user’s e2e?

Is this ever possible?

- Enable end-users to participate in the product's e2e

How about User Stories as e2e test cases?

User Stories

Stories

- As a thirsty person I want water to quench my thirst
- As a fashionable person I want umbrellas to make my drink look good
- As a thirsty person I would like lemon for added refreshment
- As a thirsty person I want a glass to hold the water in
- As a fashionable person I would like a straw to make me look cooler

Look what we got !!

openebs / litmus

Code | Issues 13 | Pull requests 1 | Projects 0 | Insights

Branch: master ▾ litmus / tests / minio / deploy_minio / e2e.feature

kmova add godog runner tools and a sample test

1 contributor

20 lines (17 sloc) | 721 Bytes

```
1  Feature: Test deployment of Minio on Kubernetes PV
2    In order to test deployment of Minio on Kubernetes PV
3    As an end user
4    I need to be able to launch Minio on Kubernetes PV
5
```

Look what we got !! contd...

20 lines (17 sloc) | 721 Bytes

```
Feature: Test deployment of Minio on Kubernetes PV
  In order to test deployment of Minio on Kubernetes PV
  As an end user
  I need to be able to launch Minio on Kubernetes PV

  Scenario: launch Minio on PV
    Given I have a kubernetes cluster with volume operator installed
    When I launch minio application on volume
    Then wait for "180s"
    And verify minio application is launched successfully on volume
    And verify PVC is bound
    And verify PV is deployed

  Scenario: delete Minio instance
    Given minio application is launched successfully on volume
    When I delete minio instance along with volume
    Then wait for "60s"
    And verify minio application is deleted
    And verify PV is deleted
```

How we did it?

- **Godog** - Enables use of English i.e. user stories
  - https://github.com/DATA-DOG/godog/

- **Kubectl** - Tool that has deep understanding of Kubernetes
  - https://github.com/kubernetes/kubernetes/tree/master/pkg/kubectl

- **Litmus** - Plays the bridge between the two worlds i.e. Users & Kubernetes
  - https://github.com/openebs/litmus

Thank You!

KubeCon CloudNativeCon Europe 2018

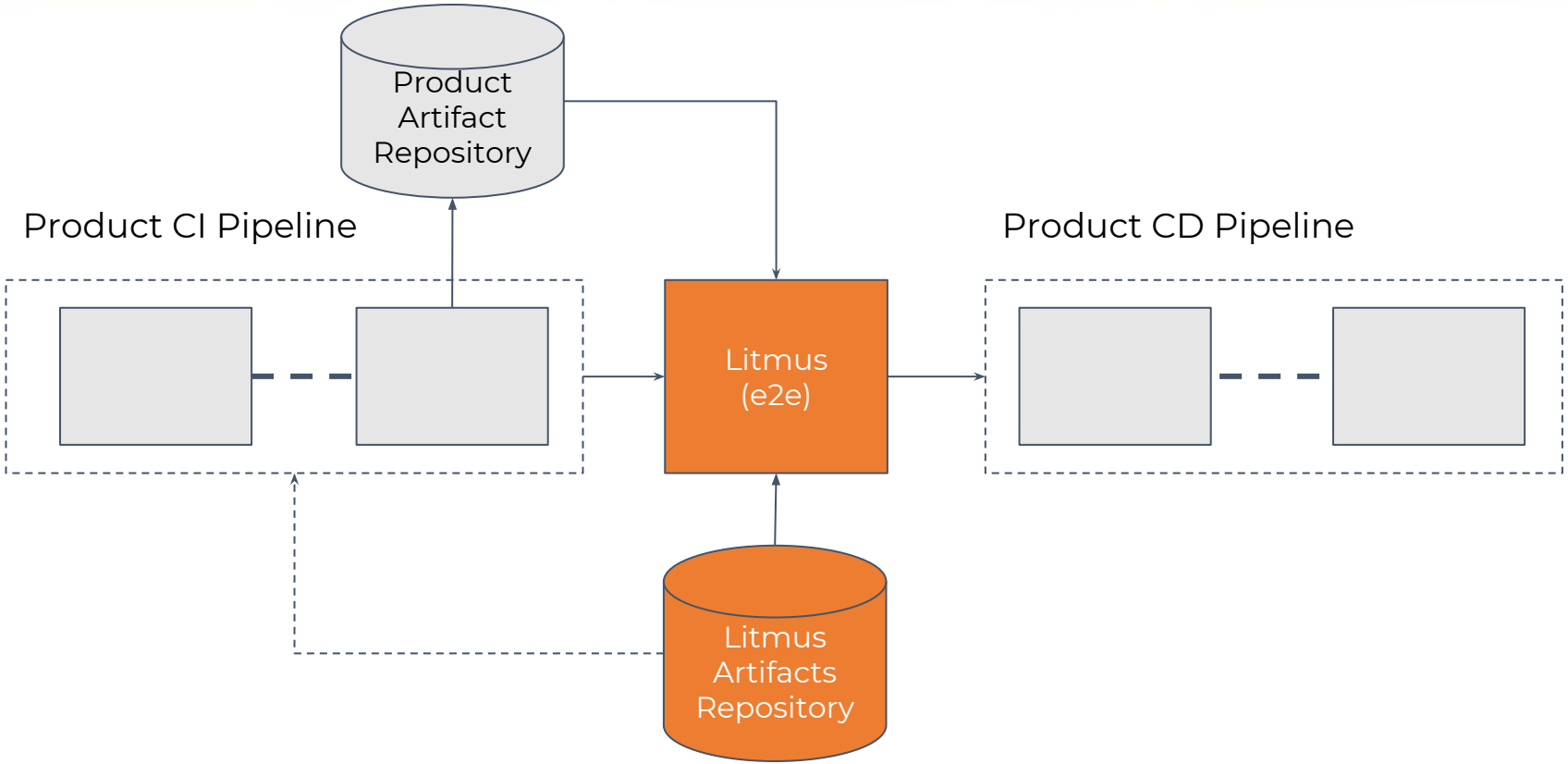
@amitnist

@y_udaykiran

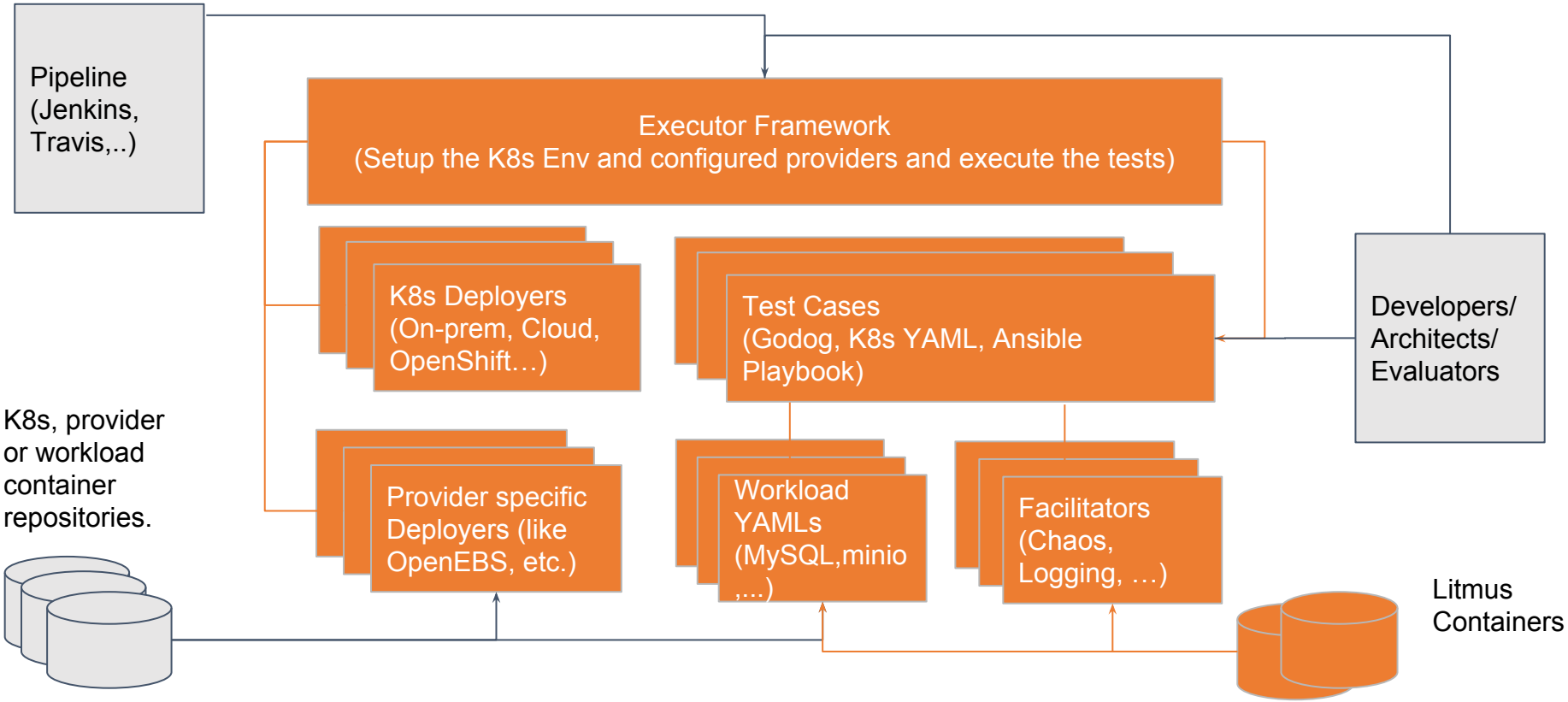
@openebs

https://slack.openebs.io/

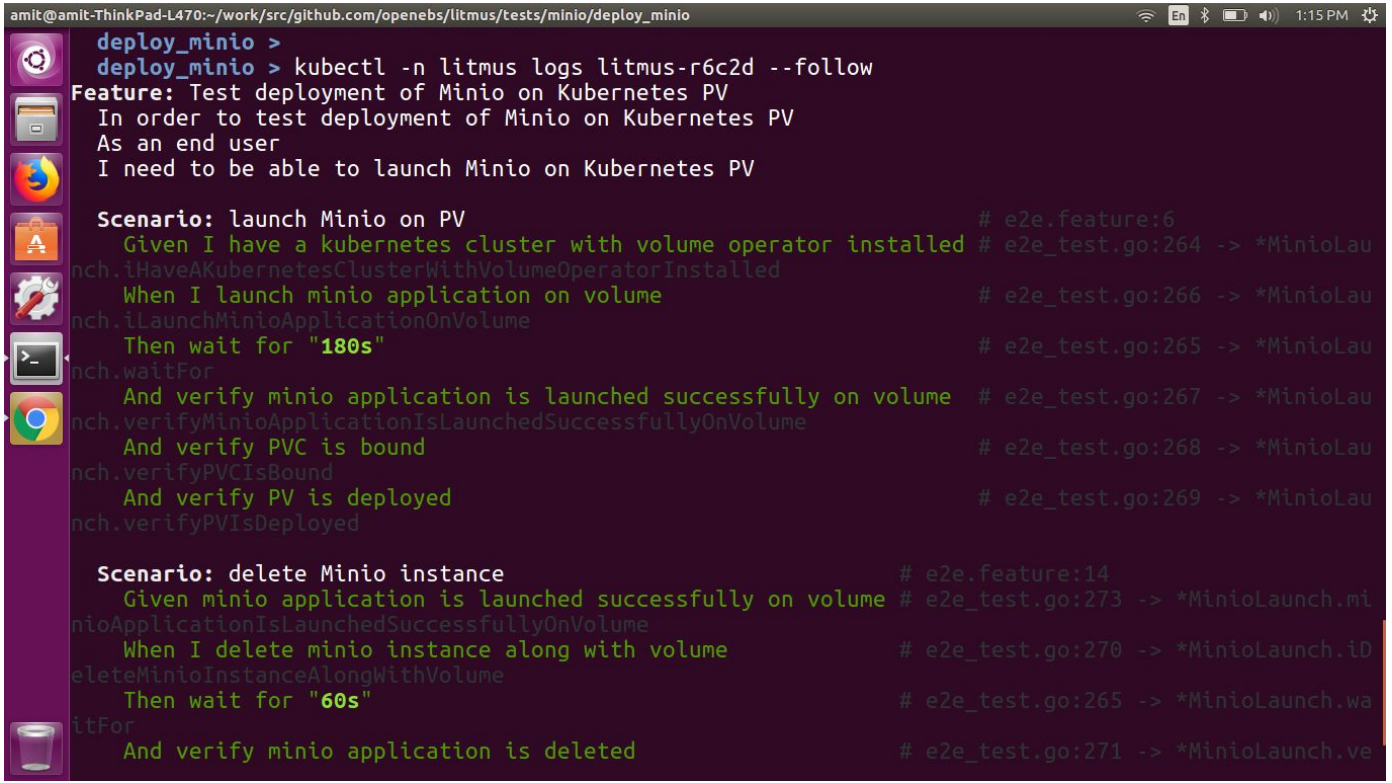
Litmus


Product
Artifact
Repository
Product CI Pipeline
Product CD Pipeline
Litmus
(e2e)
Litmus
Artifacts
Repository

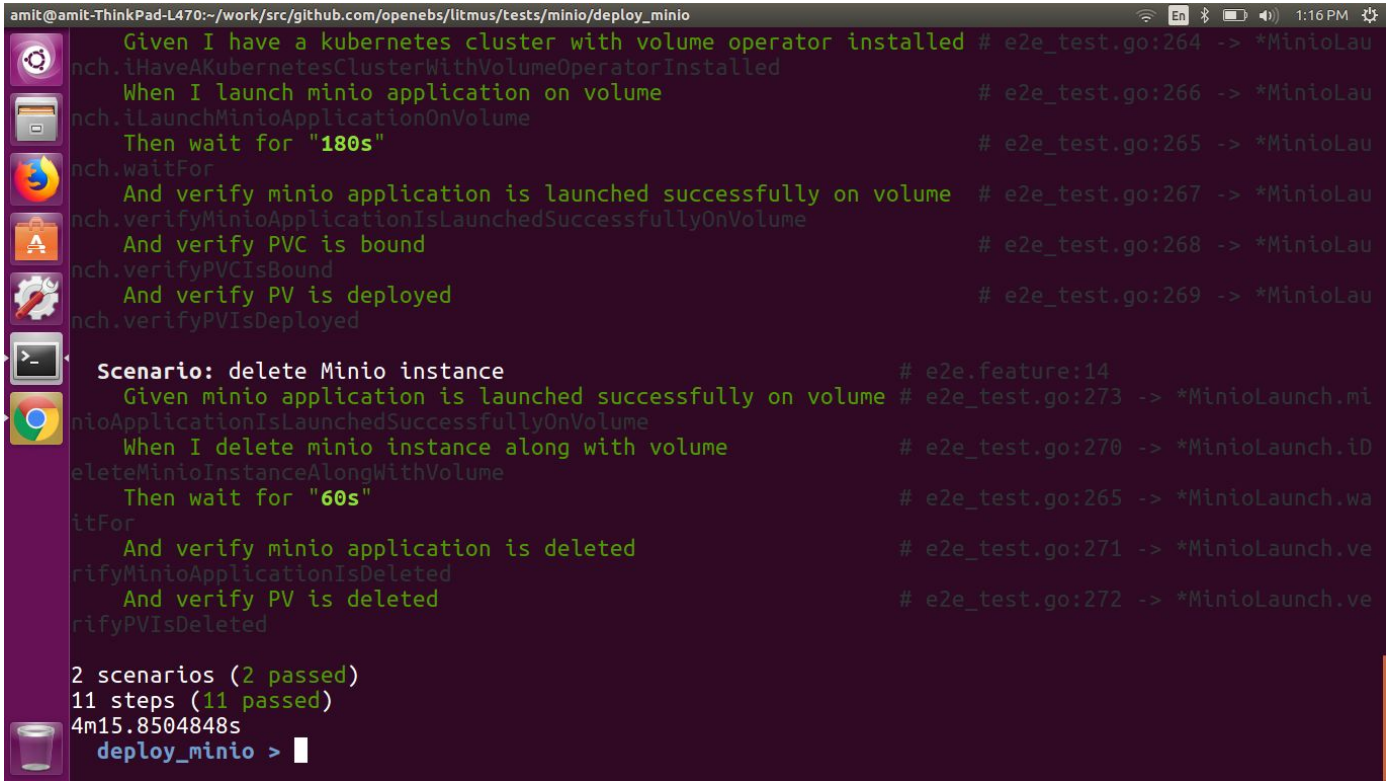
Litmus


Pipeline (Jenkins, Travis,..)
Executor Framework
(Setup the K8s Env and configured providers and execute the tests)
K8s Deployers (On-prem, Cloud, OpenShift…)
Test Cases (Godog, K8s YAML, Ansible Playbook)
Developers/ Architects/ Evaluators
K8s, provider or workload container repositories.
Provider specific Deployers (like OpenEBS, etc.)
Workload YAMLs (MySQL,minio ,...)
Facilitators (Chaos, Logging, …)
Litmus Containers

Litmus


amit@amit-ThinkPad-L470:~/work/src/github.com/openebs/litmus/tests/minio/deploy_minio
1:15 PM
deploy_minio >
deploy_minio > kubectl -n litmus logs litmus-r6c2d --follow
Feature: Test deployment of Minio on Kubernetes PV
In order to test deployment of Minio on Kubernetes PV
As an end user
I need to be able to launch Minio on Kubernetes PV
Scenario: launch Minio on PV # e2e.feature:6
Given I have a kubernetes cluster with volume operator installed # e2e_test.go:264 -> *MinioLaunch.iHaveAKubernetesClusterWithVolumeOperatorInstalled
When I launch minio application on volume # e2e_test.go:266 -> *MinioLaunch.iLaunchMinioApplicationOnVolume
Then wait for "180s" # e2e_test.go:265 -> *MinioLaunch.waitFor
And verify minio application is launched successfully on volume # e2e_test.go:267 -> *MinioLaunch.verifyMinioApplicationIsLaunchedSuccessfullyOnVolume
And verify PVC is bound # e2e_test.go:268 -> *MinioLaunch.verifyPVCIsBound
And verify PV is deployed # e2e_test.go:269 -> *MinioLaunch.verifyPVIsDeployed
Scenario: delete Minio instance # e2e.feature:14
Given minio application is launched successfully on volume # e2e_test.go:273 -> *MinioLaunch.minioApplicationIsLaunchedSuccessfullyOnVolume
When I delete minio instance along with volume # e2e_test.go:270 -> *MinioLaunch.iDeleteMinioInstanceAlongWithVolume
Then wait for "60s" # e2e_test.go:265 -> *MinioLaunch.waitFor
And verify minio application is deleted # e2e_test.go:271 -> *MinioLaunch.ve

Litmus


amit@amit-ThinkPad-L470:~/work/src/github.com/openebs/litmus/tests/minio/deploy_minio
1:16 PM
Given I have a kubernetes cluster with volume operator installed # e2e_test.go:264 -> *MinioLaunch.iHaveAKubernetesClusterWithVolumeOperatorInstalled
When I launch minio application on volume # e2e_test.go:266 -> *MinioLaunch.iLaunchMinioApplicationOnVolume
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When I delete minio instance along with volume # e2e_test.go:270 -> *MinioLaunch.iDeleteMinioInstanceAlongWithVolume
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And verify minio application is deleted # e2e_test.go:271 -> *MinioLaunch.verifyMinioApplicationIsDeleted
And verify PV is deleted # e2e_test.go:272 -> *MinioLaunch.verifyPVIsDeleted
2 scenarios (2 passed)
11 steps (11 passed)
4m15.8504848s
deploy_minio >

References

- https://github.com/openebs/litmus
- https://cucumber.io/
  - https://github.com/cucumber/cucumber
  - https://github.com/DATA-DOG/godog
- https://github.com/kubernetes/kubernetes/tree/master/test/e2e
- https://github.com/linki/chaoskube
- https://github.com/chaostoolkit/chaostoolkit-kubernetes
- https://github.com/alexei-led/pumba
- https://github.com/kubernetes/test-infra
- https://github.com/crosscloudci/cross-cloud
- https://github.com/heptio/sonobuoy
- https://github.com/wercker/stern
- https://github.com/keel-hq/keel