CICD Hacks

Cloud Native - Ubuntu, Multipass, Microk8s
Agenda

1. Canonical Introduction
2. The Canonical Distribution of Kubernetes
3. CICD in Cloud Native
4. Questions and Answer
Introduction - Ubuntu

Ubuntu is everywhere!

More people use Ubuntu than anyone knows!

People use Ubuntu constantly and absolutely most of the time without even knowing!

There are millions of PCs, servers, devices, virtual machines, and containers that have become Ubuntu to date.

Ubuntu in the Cloud

60 million

Ubuntu images launched by Docker users

14 million

FreshCloud's figures indicate 14 million Ubuntu downloads.

In November 2015

2 million

New Ubuntu cloud instances launched

20 million

Launches of Ubuntu instances in 2015 in:

- public cloud (AWS, Microsoft Azure, Google Compute Engine, Rackspace, Diane Cloud, VMware)
- private cloud (OpenStack, including some of the world's largest private clouds, like Deutsche Telecom)
- bare metal (Ubuntu is deployed on bare metal with MAAS)

There's also plenty of Ubuntu in:

- Kubernetes and Apache Mesos
- Cloud Foundry and Heroku

Ubuntu Cloud instances:

- 67,000 Ubuntu cloud instances launched in 24 hours
- 2,000 Ubuntu cloud instances launched in 1 hour
- 46 Ubuntu cloud instances launched each minute
- Approximately 1,100 Ubuntu cloud instances launched each second

IOT and Ubuntu

- Drones: DJI MIT SAIL project, UTWA!
- Running on the world's most clever robot hub
- Network switches
- Home and industrial gateways
- IoT Dev boards
- Digital signage

Ubuntu in your everyday life

- Ubuntu phones from Meizu and BQ
- George Hotz
- Uber

Anyone can install Ubuntu on Google Nexus tablet or phone

Are all running on Ubuntu
Canonical is a company behind Ubuntu
Canonical introduction
2004
FOUNDED

600+
EMPLOYEES

34+
COUNTRIES

London

Boston

Shanghai

Beijing

Tokyo

Taipei
Canonical’s distribution of Kubernetes
Why Canonical Kubernetes?

- Pure upstream, latest & greatest versions
- Operates on AWS, Azure, GCE, OpenStack, VMWare, bare metal
- Bare metal operations with MAAS
- 100% compatible with Google’s Kubernetes
- Secured. TLS, Kernel Live patching, confinement
- Upgradable between each Kubernetes Release
- Cost effective at scale
any CPU architecture

x86

s390x
enterprise traction
CICD in Cloud Native

What are the basics?
What are the problem areas?
CICD: A Basic Setup - Logical

1. Source Code (Repo)
2. Continuous Integration (CI)
3. Continuous Delivery (Cd)
4. Continuous Deployment (CD)
5. Runtime Environment

Diagram:
- Developer
- Laptop
- Code Repo
- Continuous Integration
- Continuous Delivery
- Continuous Deployment
- Runtime
CICD: A Basic Setup - Example Resources

Continuous Integration
Continuous Delivery
Continuous Deployment
Runtime

Developer
Laptop
Code Repo
Continuous Integration
Continuous Delivery
Continuous Deployment
Runtime
CICD: A Basic Setup - Specific Thread

- Developer
- Laptop
- Code Repo
- Continuous Integration
- Continuous Delivery
- Continuous Deployment
- Runtime

Tool and Platform Icons: GitLab, Git, Jenkins, JenkinsX, OCI registry, Spinnaker, UBUNTU, K8s
The Problem?
- Eliminate Internet Access
  - Large Images Slows build-deploy-test loop
- Empower “Airplane Mode”

The Benefit?
- Fast Builds
- Fast Deploys
- Fast build-deploy-test loop
CICD : A Basic Setup - All-in-One

Goals:
1. Build Self Sufficient VM
2. Allow VM to be Ephemeral
3. Restart VM and keep State

Key Tools:
1. Multipass - launch vms
2. Microk8s - launch kubernetes
CICD : A Basic Setup - All-in-One

CICD All-in-One

- GitLab
- Jenkins
- JenkinsX
- OCI registry
- Spinnaker
- Cloud Native

Microk8s (kubernetes)
CICD: A Basic Setup - Storage..

VM: Guest OS - Ubuntu

CICD All-in-One

- GitLab
- Jenkins
- JenkinsX
- OCI registry
- Spinnaker
- Cloud Native

Optional

1. MOUNT
2. PV / PVC

Microk8s (kubernetes)
CICD: A Basic Setup - Demo

→ https://github.com/canonical-labs/cicd-microk8s-basic
CICD: A Basic Setup - Distributed

“CI”
- GitLab
- JenkinsX
- Jenkins
- Microk8s

DEV
- Microk8s

STAGING
- Microk8s

CD
- registry
- Spinnaker
- Microk8s

PRODUCTION
- Microk8s

Git
Jx

Microk8s

Microk8s

Microk8s

Microk8s
Thank you!

More info:

https://microk8s.io
https://www.ubuntu.com/ai
https://discourse.ubuntu.com/c/multipass
https://www.ubuntu.com/kubernetes
https://github.com/canonical-labs/cicd-microk8s-basic