INSTALLATION RUNBOOK FOR Iron.io + IronWorker

Application Type:	**Job processing**
Application Version:	**1.0**
MOS Version:	**8.0**
OpenStack version:	**Liberty**
Murano package checksum:	**27ba40000dc1885b830d3d370b3fb5b2**
Glance image checksum (docker):	**158e19b86e7532aea708267cc8092e32**
Glance image checksum (kubernetes):	**16e36fe2c6abac0103af1faae6203213**

Content

Document History

Version	Revision Date	Description
0.1	08-29-2016	Initial Version

1 Introduction

This document is to serve as a detailed Deployment Guide for Hybrid IronWorker. Iron.io offers IronWorker as a hosted service or as a Hybrid deployment. Hybrid IronWorker enables you to get all the power and benefits of IronWorker platform while running your workloads on your own hardware. You can run them on your own servers on any cloud or even in your own datacenter, behind the firewall.
This document describes the reference architecture, installation steps for Mirantis OpenStack (MOS) + Hybrid IronWorker, limitations and testing procedures

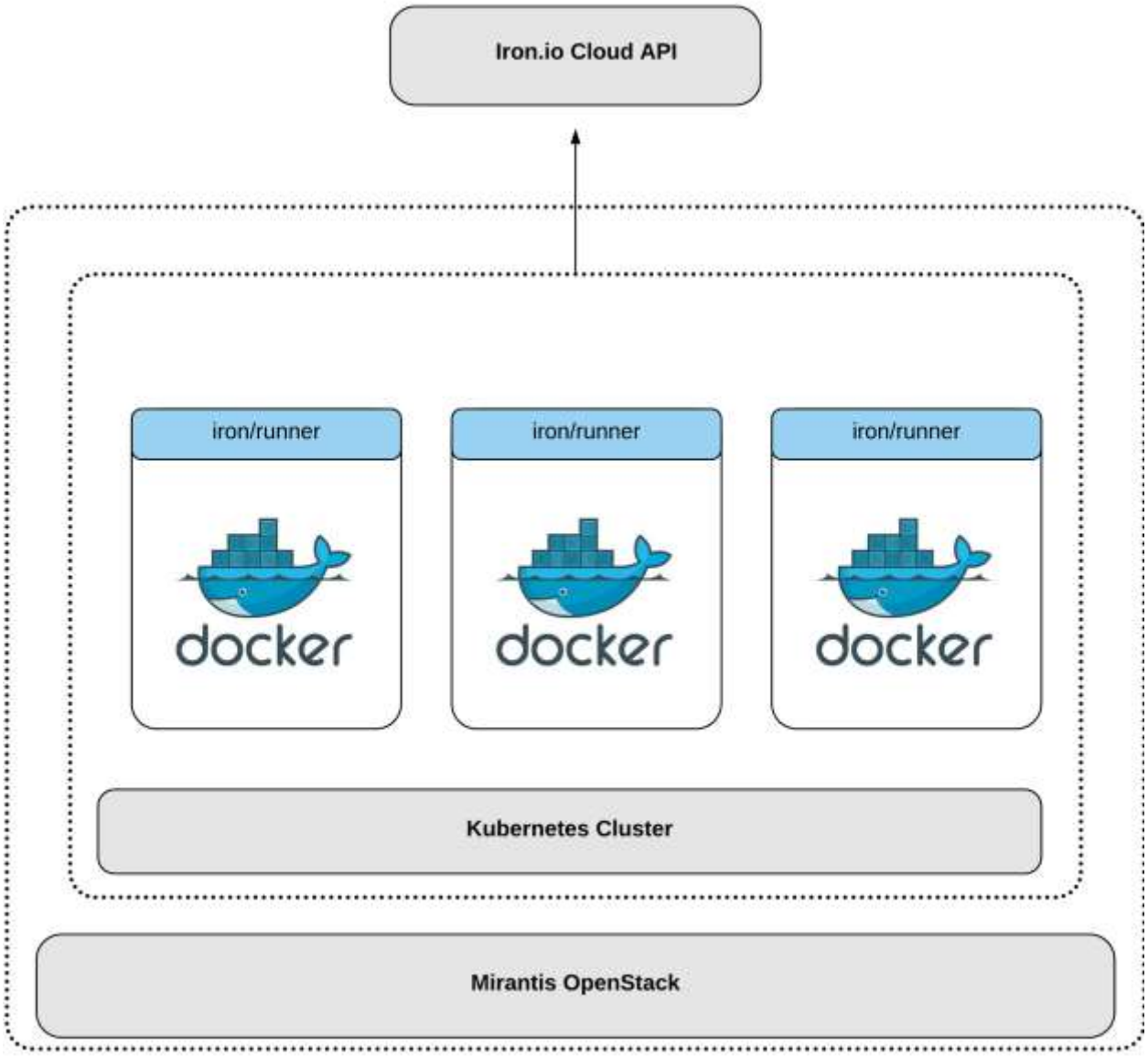
1.1 Target Audience

Developers building distributed applications on top of OpenStack need a batch of worker to process jobs. Such developers can register an account in Iron.io, deploy IronWorker on top of OpenStack on their side and post jobs in the Worker's API. Every posted job than will be executed on a deployed IronWorker instance.

2 Application overview

With Hybrid Iron.io, the API and all the complexity of our job processing system lives in the cloud, while the actual execution of the workloads is on-premise, behind your firewall, on your hardware (or in your own VPC). The only thing you need to run on your systems is our *runner* container; no databases to install and maintain, no API servers, or anything else. The *runner* container talks to the Iron.io API, asking for jobs, executing them, and dealing with all the things that can happen while running.

3 Joint Reference Architecture

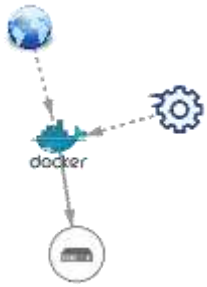


4 Physical & Logical Network Topology

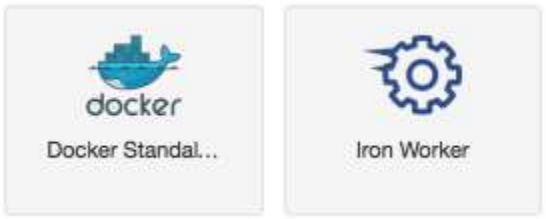
The following are two supported installation methods that we'll cover in Section 5.3, steps 4-5.

4.1 Docker Standalone Host Installation

This installation method has a dependency on the Docker Murano package. A single Docker host is deployed with the IronWorker Docker image.

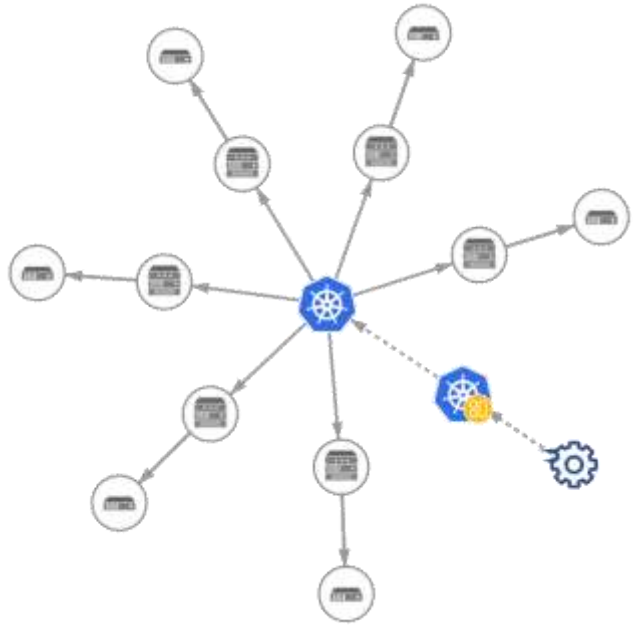


Application Components

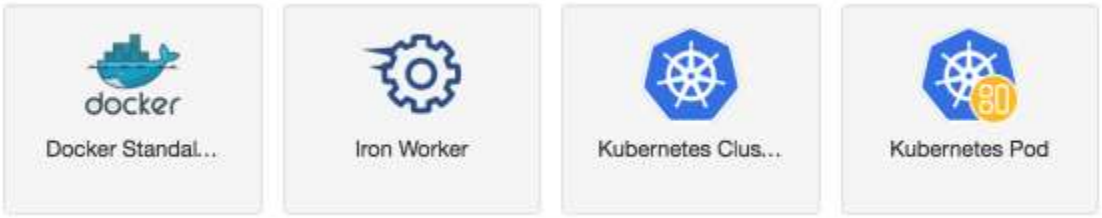


4.2 Kubernetes Cluster Installation

This installation method has a dependency on the Kubernetes Murano package. A cluster of Kubernetes pods are deployed with the IronWorker Docker image.



Application Components



5 Installation & Configuration

5.1 Environment preparation

The only requirement is that Murano be installed in order to run the IronWorker application component.

The following settings are provided as an example, as they were tested for the lab environment:

- OpenStack Release: Liberty on Ubuntu 14.04
- Compute: QEMU
- Network: Neutron with VLAN segmentation
- Storage Backends: Cinder LVM over iSCSI volumes
- Additional Services: Install Murano

5.2 MOS installation

Guidelines and best practices published by Mirantis apply. Please follow Mirantis documentation on setting up a Fuel node and deploying your OpenStack environment - https://docs.mirantis.com/openstack/fuel/fuel-8.0/

5.2.1Health Check Results

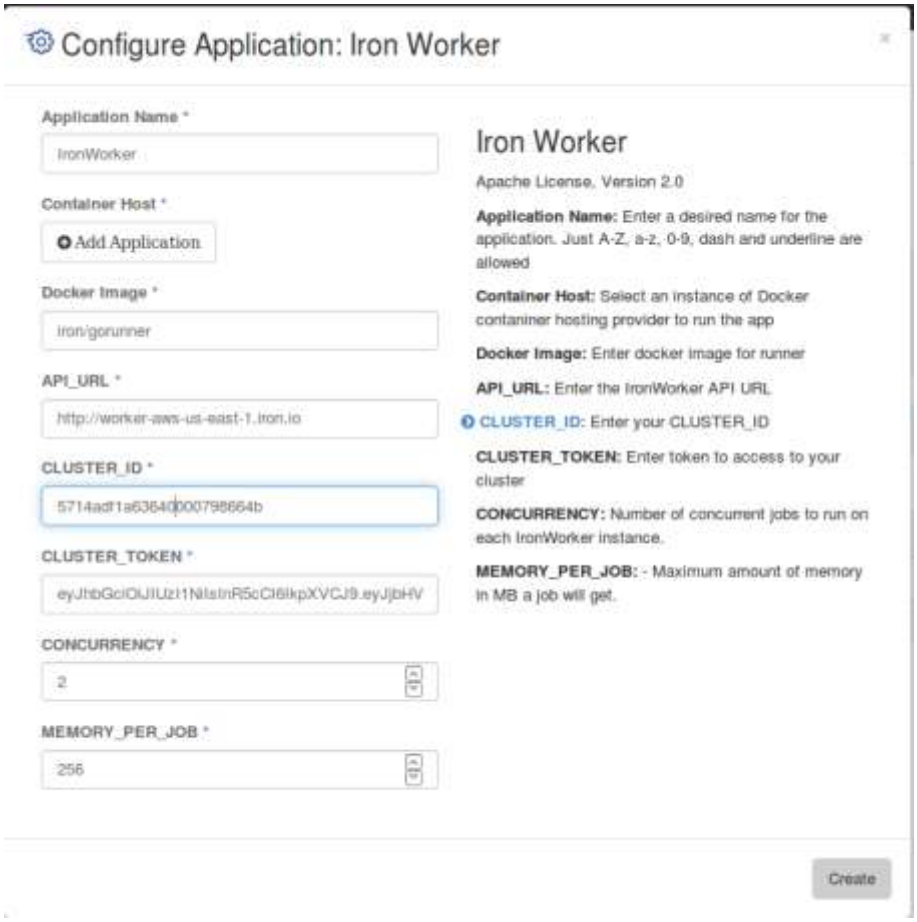
This guide assumes that all automated health checks pass following the deployment of the OpenStack environment. No additional health checks are required to validate the IronWorker Murano package.

5.3 IronWorker installation steps

1. Add the *IronWorker* package from the Murano community app catalog - https://apps.openstack.org/#tab=murano-apps

2. Create a Murano environment:
    a. In the Horizon dashboard, navigate to *Murano > Application Catalog > Environments*
    b. On the *Environments* page, click the *Add New* button.
    c. In the *Environment Name* field, enter the name for the new environment.
    d. From the *Environment Default Network* drop-down list, choose a specific network, if necessary, or leave the default *Create New* option to generate a new network.

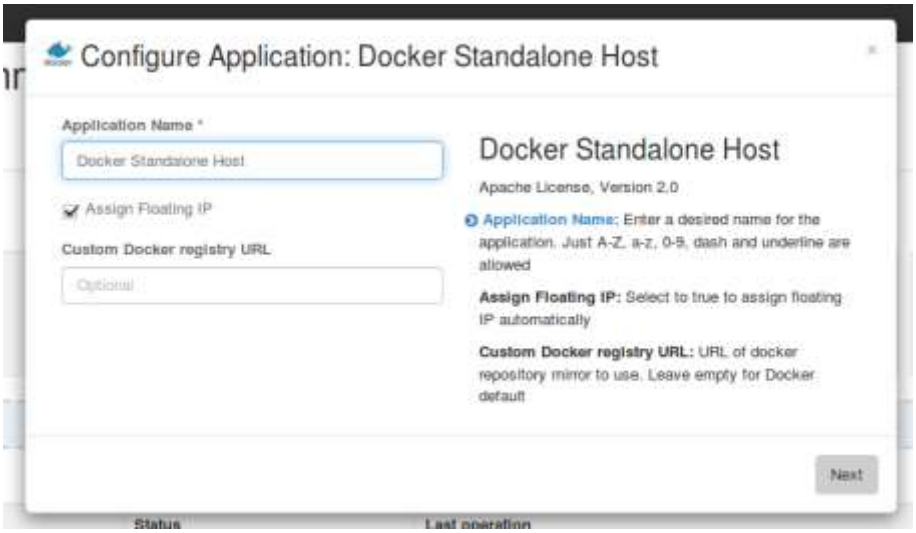
3. Add the *IronWorker* component to the environment created, and follow the installation wizard.

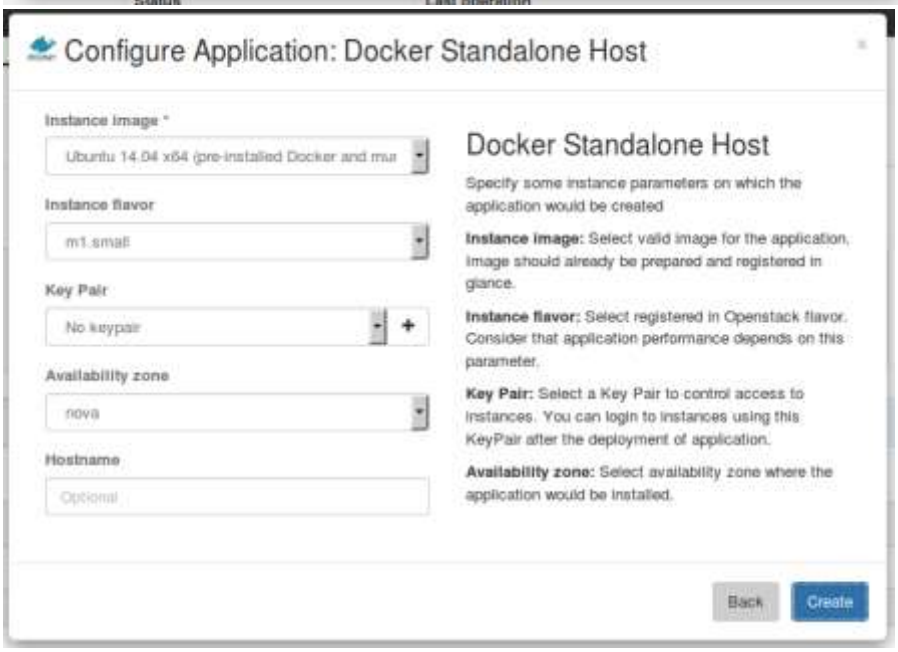


Specify **CLUSTER_ID** and **CLUSTER_TOKEN** of your IronWorker cluster. Other values could remain with their defaults. To retrieve your CLUSTER_ID and CLUSTER_TOKEN please follow the Prepare the environment section of the Test Cases section of this document.

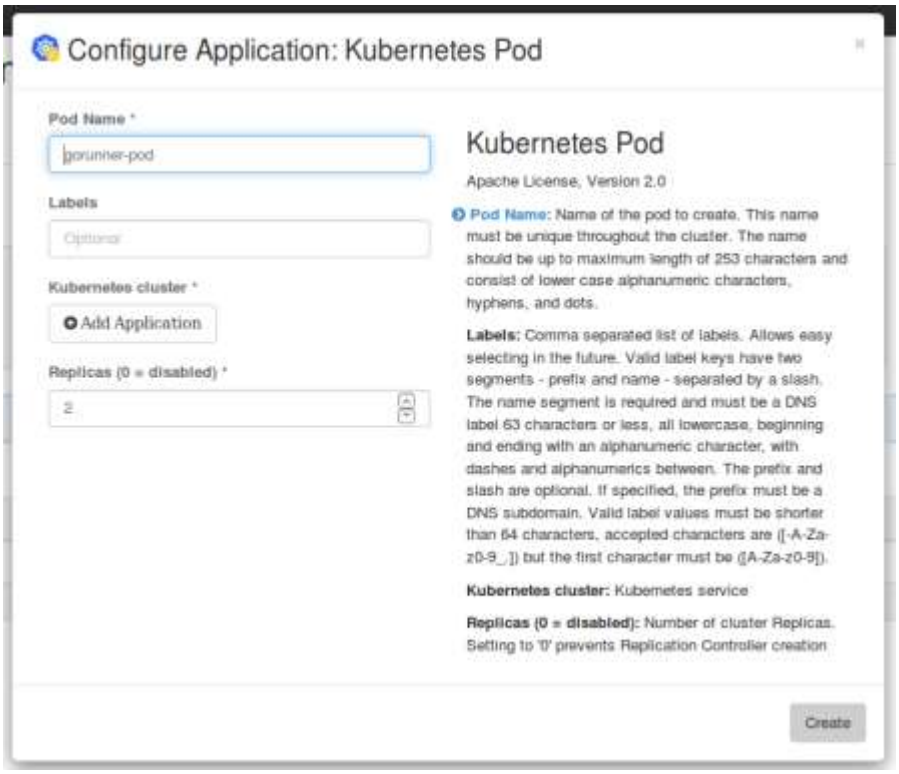
4. For IronWorker on *Docker Standalone Host*

a. Click *Add Application* button under *Container Host* field and select *Docker Standalone Host*
b. Configure *Docker Standalone Host* Component



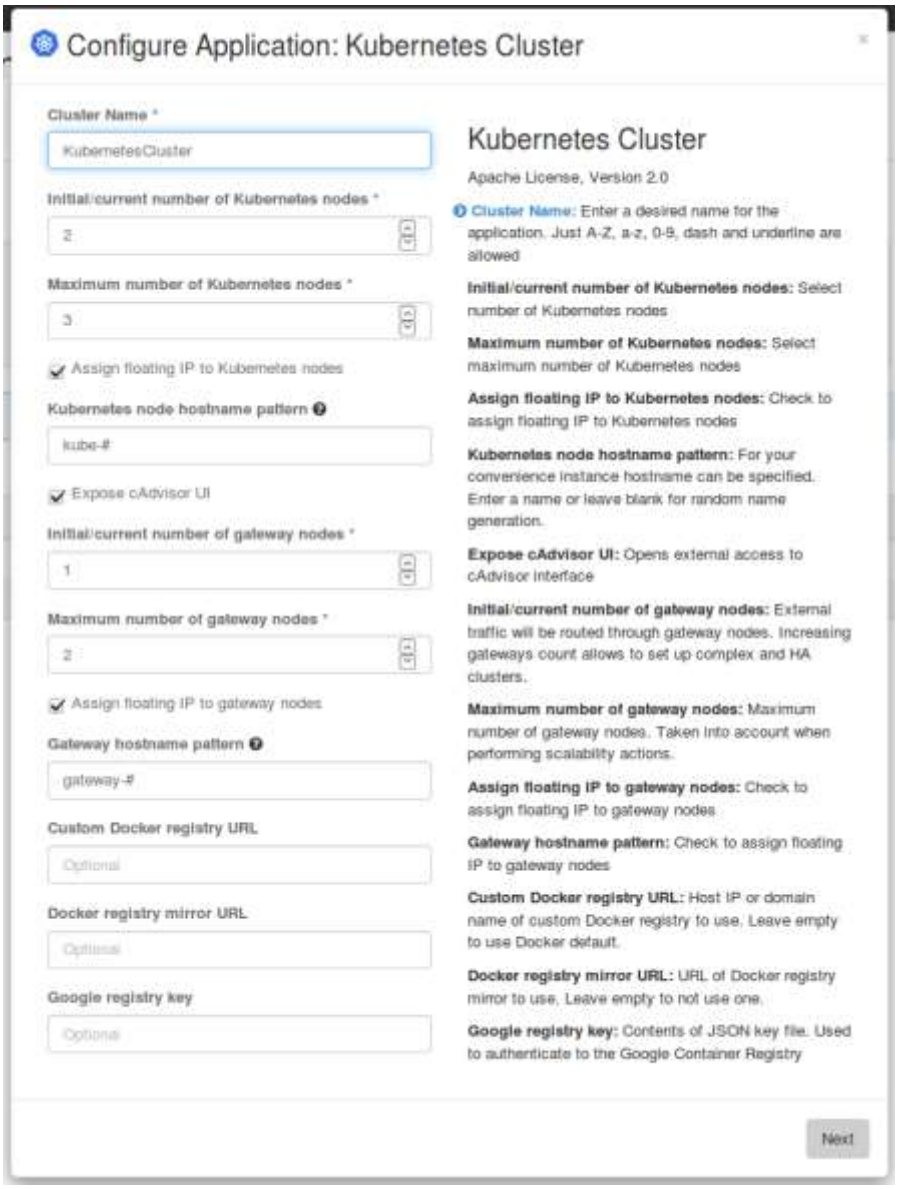


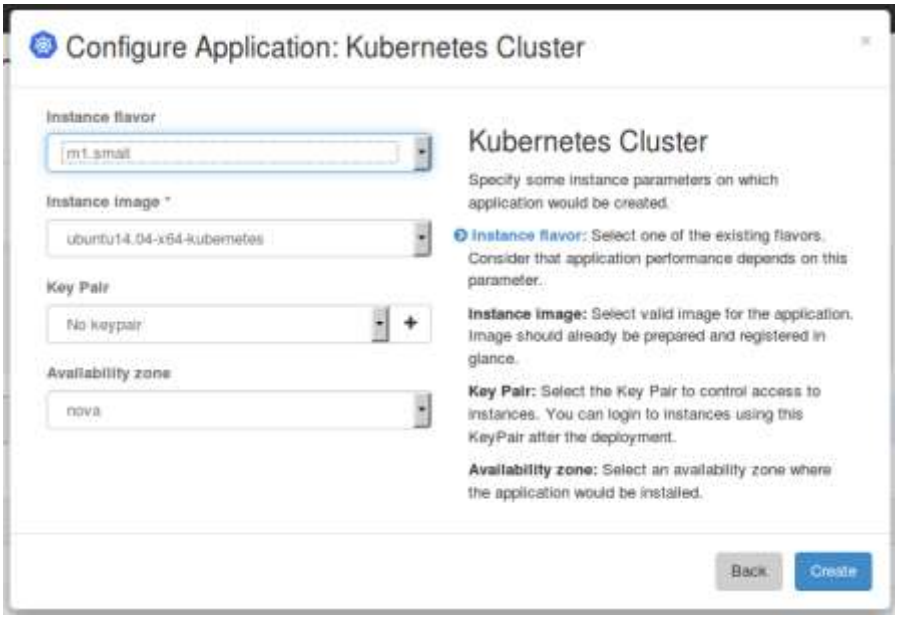
5. For IronWorker on Kubernetes
a. Click *Add Application* button under *Container Host* field and select *Kubernetes Pod*
b. Configure *Kubernetes Pod* Component



c. Click *Add Application* button under *Kubernetes cluster* field press

d. Configure *Kubernetes Cluster* Component





6. Click *Deploy the Environment*

5.4 Limitations

- Only HTTP endpoints for **API_URL** are supported. HTTPS will be supported in upcoming patch.
- Make sure you have enough memory on instances you spawn. Each IronWorker instance requires 16 + **CONCURRENCY***MEMORY_PER_JOB** megabytes.

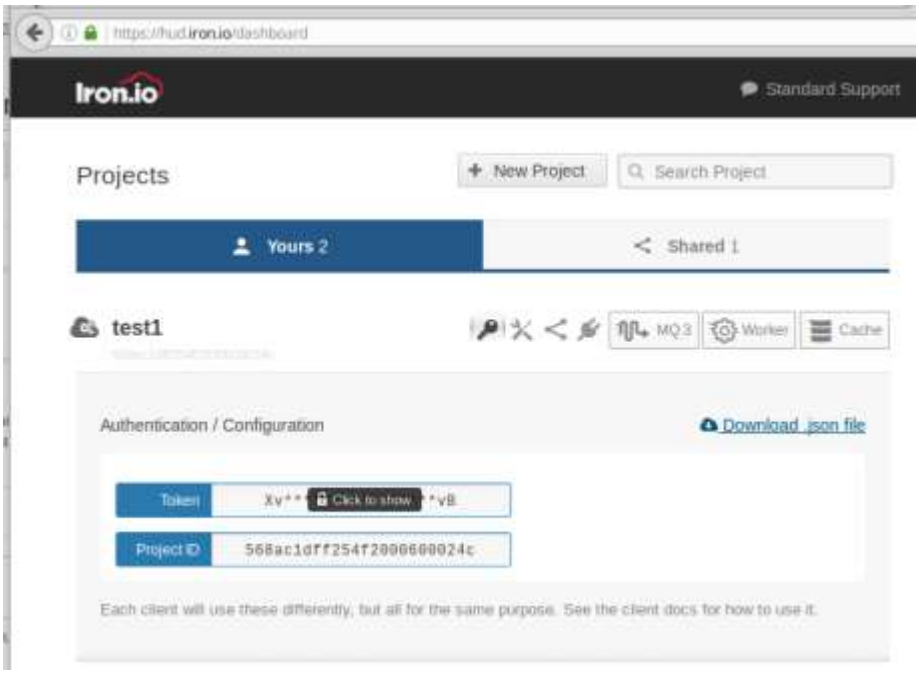
5.5 Testing

5.5.1 Test cases

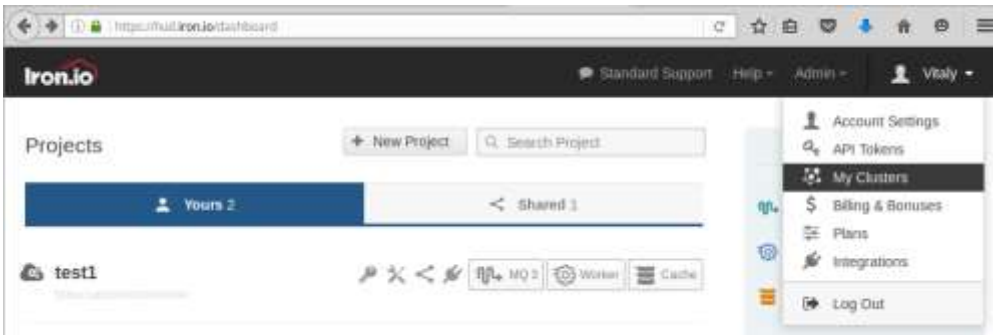
Testing the IronWorker installation was done manually. You need an Iron.io IronWorker account to pass the test case successfully.

Prepare the environment

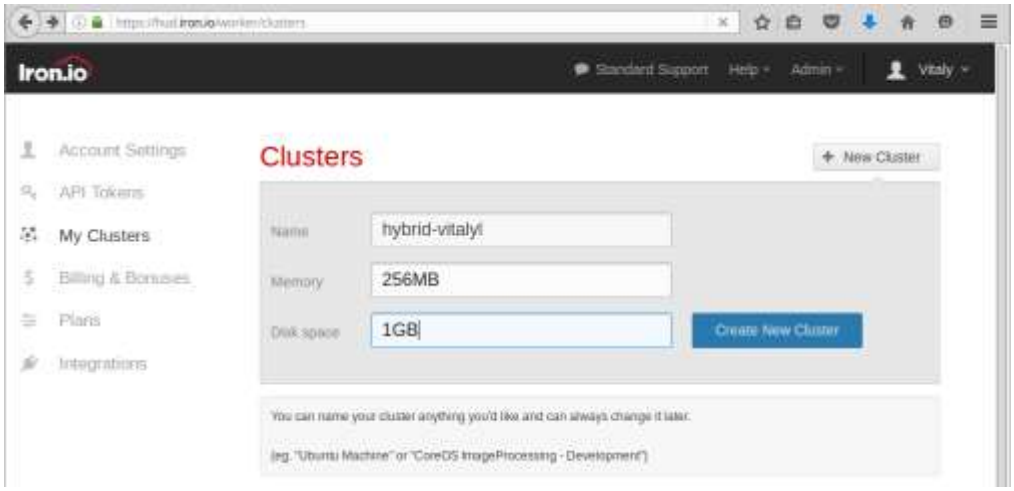
1. Login into your Iron.io IronWorker account and collect the **PROJECT_ID** and **TOKEN** on the https://hud.iron.io/dashboard page (click on the *key* button aside your project)



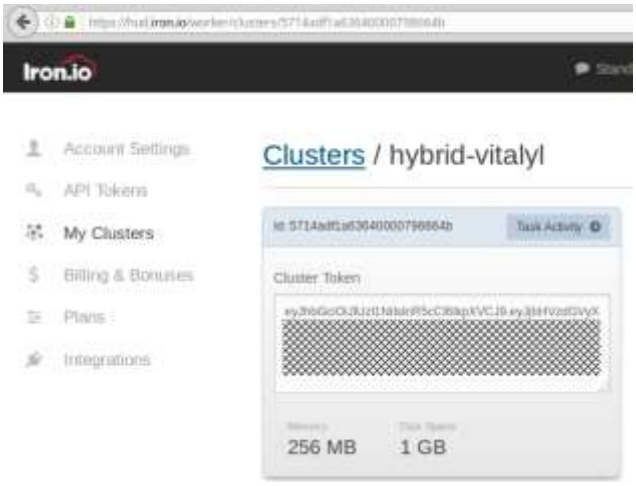
2. Make sure you've created a cluster, if not, please create a new one
a. Contact Iron customer support (support@iron.io) to ensure that custom clusters are enabled for your account.
b. Open My Clusters under your login button



c.Click *New Cluster* and provide a name, memory and disk space per runner, then click *Create New Cluster*



3. Copy **CLUSTER_ID** and **CLUSTER_TOKEN** from your cluster page



4. Open a terminal
5. Export the following variables

```
export IRON_PROJECT_ID=<Your PROJECT_ID>
export IRON_TOKEN=<Your TOKEN>
export IRON_CLUSTER_ID=<Your CLUSTER_ID
```

6. Install Iron CLI

```
curl -sSL https://cli.iron.io/install | sh
```

7. Register a code package (Docker image) within IronWorker to execute, for example, Docker's hello-world.

```
iron register hello-world
```

Case 1

Execute the following command inside the terminal with the exported variables, it should print Docker's hello-world output.

```
iron worker queue -cluster $IRON_CLUSTER_ID -wait hello-world
```

For more information about Iron CLI please visit
http://dev.iron.io/worker/cli/http://dev.iron.io/worker/cli/

5.5.2 Test Results

Case 1 output

Note: ID's in your test run will differ

```
----->  Configuring client
        Project 'test1' with id='568ac1dff254f2000600024c'
----->  Queueing task 'hello-world'
        Queued task with id='57b33f067582400006cb1b80'
        Check
https://hud.iron.io/tq/projects/568ac1dff254f2000600024c/jobs/57b33f067582400006cb1b80 for more
info
----->  Waiting for task57b33f067582400006cb1b80
----->  Done
----->  Printing Log:

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
 1. The Docker client contacted the Docker daemon.
 2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
 3. The Docker daemon created a new container from that image which runs the
    executable that produces the output you are currently reading.
 4. The Docker daemon streamed that output to the Docker client, which sent it
    to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
 $ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker Hub account:
 https://hub.docker.com

For more examples and ideas, visit:
 https://docs.docker.com/engine/userguide/
```

6 How To (Applicable for Murano packages & Glance images)

Pre-requisites:

- OS: Linux
- Mirantis OpenStack is up and running
- Murano-enabled environment
- Murano package is imported

6.1 Murano package check

1. Download Murano package
   Go to the Horizon -> Murano tab -> Package definitions
   Select ‘Download Package’ at the ‘Actions’ drop down list
2. Go to the downloaded catalog and execute the following command:
   # *md5sum <package_name>*
3. Add the md5 checksum to the runbook

6.2 Glance image check

1. Go to the controller node via SSH
2. Get the UUID of your glance image
   # *source /root/openrc*
   # *glance image-list*
3. Get your package’s checksum
   # *glance image-show <murano_image_UUID>* | *grep checksum*
4. Add the image checksum to the title page