




OpenSDS 101: Introduction

How to Install and Use OpenSDS

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How to Install OpenSDS

- For developers
 - devsds for Hotpot (the easiest way to get started)
 - Build and install for Sushi
- For customers
 - Ansible 
 - Hotpot and Sushi
 - Helm  or Docker-compose  (containerized environment)
 - Hotpot
 - Hotpot and Sushi (WIP)



OpenSDS Installation for Developers: Installing Hotpot

Prerequisite: git, make, gcc

Bootstrap

```
curl -sSL https://raw.githubusercontent.com/opensds/opensds/master/script/cluster/bootstrap.sh | sudo bash
```

Start OpenSDS services

```
cd $GOPATH/src/github.com/opensds/opensds && script/devsds/install.sh
```

Uninstall OpenSDS

```
cd $GOPATH/src/github.com/opensds/opensds && script/devsds/uninstall.sh
```

Instructions: <https://github.com/opensds/opensds/wiki/Local-Cluster-Installation-with-LVM>



OpenSDS Installation for Developers: Testing Hotpot

```
sudo cp build/out/bin/osdsctl /usr/local/bin
export OPENSIDS_ENDPOINT=http://127.0.0.1:50040
export OPENSIDS_AUTH_STRATEGY=noauth
```

```
### List pools
osdsctl pool list
```

```
### List docks
osdsctl dock list
```

```
### Create profile (already done by devsd)
osdsctl profile create '{"name": "default", "description": "default policy"}
```

```
### Create volume
osdsctl volume create 1 --name=test-001
```

```
### Show volume
osdsctl volume show <volume_id>
```

```
### List volumes
osdsctl volume list
```

```
### Extend volume
osdsctl volume extend <volume_id> <new_size>
```

```
### Delete volume
osdsctl volume delete <volume_id>
```

```
### Create snapshot
osdsctl volume snapshot create <volume_id>
```

```
### Show snapshot
osdsctl volume snapshot show <snapshot_id>
```

```
### List snapshots
osdsctl volume snapshot list
```

```
### Delete snapshot
osdsctl volume snapshot delete <snapshot_id>
```



OpenSDS Installation for Developers: Installing Sushi and using OpenSDS



Prerequisite: git, make, gcc, docker, golang, kubernetes, librados-dev, librbid-dev, ceph-common

CSI Plugin

<https://github.com/opensds/nbp/wiki/OpenSDS-CSI-Plugin-Testing-Steps>

```
git clone https://github.com/opensds/nbp.git $GOPATH/src/github.com/opensds/nbp
cd $GOPATH/src/github.com/opensds/nbp/ make docker
vi csi/server/deploy/kubernetes/csi-configmap-opensdsplugin.yaml # change OpenSDS endpoint IP
kubectl create -f csi/server/deploy/kubernetes
kubectl create -f csi/server/examples/kubernetes/nginx.yaml
```

FlexVolume and Dynamic Provisioner

<https://github.com/opensds/nbp/wiki/OpenSDS-FlexVolume-and-Provisioner-Testing-Steps>



OpenSDS Installation for Customers: Preparing for Helm Install

Prerequisite: A running Kubernetes environment.

Prepare lvm environment

```
touch ~/pv_1 && touch ~/pv_2
truncate -s 20G ~/pv_1 && losetup -f ~/pv_1 --show
truncate -s 15G ~/pv_2 && losetup -f ~/pv_2 --show
vgcreate vg001 /dev/loop0 /dev/loop1 # Change the device path according to the output of last command.
```

Helm install

```
wget https://kubernetes-helm.storage.googleapis.com/helm-v2.8.2-linux-amd64.tar.gz
tar zxvf helm-v2.8.2-linux-amd64.tar.gz && cp linux-amd64/helm /usr/bin/
```

helm init # Make sure your helm version is at least v2.7+ !

```
kubectl get pod -n kube-system
```

```
kubectl create clusterrolebinding tiller-cluster-admin \
  --clusterrole=cluster-admin \
  --serviceaccount=kube-system:default
```



OpenSDS Installation for Customers – Installing Hotpot using Helm

Download code

```
git clone https://github.com/opensds/opensds.git -b development
cd opensds
```

Configure and install OpenSDS

```
mkdir -p /etc/opensds
cp -r examples/* /etc/opensds/
vim /etc/opensds/opensds.conf # Change the backend_type to 'lvm'
```

```
helm install charts/opensds --name=osds-service
```

```
kubectl get pod
kubectl get svc # Get cluster ip of 'osds-service-opensds-opensds' service
```



OpenSDS Installation for Customers – Testing after Helm Install

```
wget https://raw.githubusercontent.com/opensds/opensds/master/osdsctl/bin/osdsctl  
chmod +x osdsctl && mv osdsctl /usr/local/bin/
```

```
export OPENSDDS_ENDPOINT=http://{svc_ip}:50040  
export OPENSDDS_AUTH_STRATEGY=noauth
```

```
osdsctl pool list  
osdsctl profile create '{"name": "default", "description": "default policy"}'  
osdsctl volume create 1 --name=test-001
```


OpenSDS Installation for Customers: Preparing for Ansible Install

Prerequisite: kubernetes v1.10

```
### Download opensds-install
git clone https://github.com/opensds/opensds-installer.git
cd opensds-installer/ansible
```

```
### Install ansible tool
./install_ansible.sh
```

```
### Configure group_vars/common.yml
nbp_plugin_type: csi # options are 'standalone', 'csi', or 'flexvolume'

### Configure group_vars/osdsdock.yml
enabled_backend: lvm # Supported backends include 'lvm', 'ceph', and 'cinder'
pv_devices: # Specify block devices and ensure they exist if you choose lvm
    #- /dev/sdc
    #- /dev/sdd
vg_name: "vg001" # Specify a name for VG if choosing lvm

### Configure group_vars/lvm/lvm.yml
tgtBindIp: 127.0.0.1 # change tgtBindIp to the real host ip
pool: "vg001" # change pool name to be the same as vg_name
```

OpenSDS Installation for Customers: Installing OpenSDS using Ansible

```
### Check if all hosts are reachable  
sudo ansible all -m ping -i local.hosts
```

```
### Run playbook to deploy OpenSDS  
sudo ansible-playbook site.yml -i local.hosts
```

```
### Cleanup  
sudo ansible-playbook clean.yml -i local.hosts
```



OpenSDS Installation for Customers: Testing after Ansible Install

```
sudo cp /opt/opensds-linux-amd64/bin/osdsctl /usr/local/bin
```

```
export OPENSDDS_ENDPOINT=http://127.0.0.1:50040
```

```
export OPENSDDS_AUTH_STRATEGY=noauth
```

```
osdsctl pool list
```

```
osdsctl profile create '{"name": "default", "description": "default policy"}'
```

```
osdsctl volume create 1 --name=test-001
```

```
### Check if OpenSDS CSI plugin is running
```



```
kubectl get pod
```

```
### Create pod with OpenSDS volumes
```

```
cd /opt/opensds-k8s-linux-amd64/csi
```

```
kubectl create -f examples/kubernetes/nginx.yaml
```

Demo

- Helm  installation – Hotpot
- Ansible  installation – Hotpot and Sushi (CSI)



Thank You

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