## **Kubernetes、Jupyter hub安装文档**

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### **一. Prerequisite**

1:disable selinux

2:stop firewalld

3:command: swapoff -a

4:command: echo "1" > /proc/sys/net/bridge/bridge-nf-call-iptables

### **二. install kubernetes**

Next, you can use [kubeadm to install kubernetes](https://kubernetes.io/docs/setup/independent/create-cluster-kubeadm/)

2.1 install docker

yum install \*\*\*

2.2 download kubeos

git clone https://github.com/kubesys/kubeos.git

rpm --force -Uvh https://github.com/kubesys/kubeos/releases/download/1.2/kube-tools-v1.13.5-cloudplus.1903.el7.x86\_64.rpm

2.3 install kubernetes

cd pods/kubernetes

bash pull.sh

bash dev.sh

2.4 install calico

cd pods/calico

bash dev.sh

waiting for a few minutes, ensure that all pods are running

[root@iscassystems calico]# kubectl get po -n kube-system

NAME READY STATUS RESTARTS AGE

calico-etcd-94d8m 1/1 Running 0 3m35s

calico-kube-controllers-74887d7bdf-8j8ms 1/1 Running 2 5m42s

calico-node-ms29r 1/1 Running 4 5m42s

coredns-86c58d9df4-cd5sz 1/1 Running 0 18m

coredns-86c58d9df4-kzgd7 1/1 Running 0 18m

etcd-iscassystems 1/1 Running 0 18m

kube-apiserver-iscassystems 1/1 Running 0 18m

kube-controller-manager-iscassystems 1/1 Running 0 18m

kube-proxy-gv74x 1/1 Running 0 18m

kube-scheduler-iscassystems 1/1 Running 0 18m

2.5 install helm

cd pods/helm

bash dev.sh

2.6 install dashboard

cd pods/webui

配置dashboard , vim kubedash.yaml, 最后service添加：type: NodePort

bash kubedash.sh

The outputs:

URL: https://<masterip>:32668

token: eyJhbGciOiJSUzI1NiIsImtpZCI6IiJ9..eMAcEsWKDhQMbkCog4QPXmkhLRJTpy\_E0XnuoxcoSvKcyaCG5aFoq6bbNFmAMco-Wc-VdOnUvdoSwe1YEC67oZBDrcMfa3jtVnxfIBsBoA0Vj-CN-Sw0KMAdvy6qKq1pyh-fdm15lT25TwohF-aPOKX2ybUMYRFBgzB0ao0SQ\_kzcDY-nswlifwg3MsNUG9y0MR8S5AAvC422FaJY1P0awLwbMu\_WulE2AyjW1YTvUkemZYk8iEZgFTYYiq4veT6OZWm8-FfcL0ic69Stznk0qyWEPBwQn952-22S19PUlE0ZjrCNaVSFEDErjKkx4uBzIXlR6vmAaPL-Z3skXDw3w

2.7 Then, you should install a network plugin for kubernetes

kubectl create -f https://raw.githubusercontent.com/kubesys/kube-syspods/master/kube-networks/calico/yamls/etcd.yaml

kubectl create -f <https://raw.githubusercontent.com/kubesys/kube-syspods/master/kube-networks/calico/yamls/calico.yaml>

##集群环境安装##

2.8 node 节点安装 kubeos

2.9 master 节点执行 bash join.sh

kubeadm join Master\_IP :6443 --token baf612.yr2gejvnsai5jgh3 --discovery-token-ca-cert-hash sha256:fb8d9338d7ed032cd7be73c958357a93af0beebf867c047bb874ba15d5d0478d

2.10 在node节点上执行上述命令

Tips: 如何加入失败，限制性kubeadm reset -f

### **三. Install Jupyter hub Helm patch**

patch 1: upadte hub's docker using the scripts at <https://github.com/kubesys/kube-dataAnalysis/tree/master/jupyter/hub>

docker build . -t jupyterhub/k8s-hub:0.8.0

patch 2: upadte singleuser's docker using the scripts at <https://github.com/kubesys/kube-dataAnalysis/tree/master/jupyter/singleuser-sample>

docker build . -t jupyterhub/k8s-singleuser-sample:0.8.0

Then, install helm by using the following scripts.

cp ../helm/helm /usr/bin/

kubectl --namespace kube-system create serviceaccount tiller

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

helm init --service-account tiller --wait

kubectl patch deployment tiller-deploy --namespace=kube-system --type=json --patch='[{"op": "add", "path": "/spec/template/spec/containers/0/command", "value": ["/tiller", "--listen=localhost:44134"]}]'

### **四. install Jupyterhub**

bash dev.sh

patch 3: support kubernetes 1.13

kubectl create -f https://raw.githubusercontent.com/kubesys/kube-dataAnalysis/master/jupyter/yamls/admin-pv.yaml

kubectl create -f <https://github.com/kubesys/kube-dataAnalysis/blob/master/jupyter/yamls/pv.yaml>

Tips: 执行dev 失败，或者需要重新安装：

jupyter-hub 重装的时候，需要删除jhub，命名空间，然后执行helm delete jhub -purge

### **Finally**

Execute the command

kubectl describe service proxy-public --namespace jhub

Then can see the following outputs:

Name: proxy-public

Namespace: jhub

Labels: app=jupyterhub

chart=jupyterhub-0.8.0

component=proxy-public

heritage=Tiller

release=jhub

Annotations: <none>

Selector: component=proxy,release=jhub

Type: LoadBalancer

IP: 10.111.253.110

Port: http 80/TCP

TargetPort: 8000/TCP

NodePort: http 31589/TCP

Endpoints: 192.168.66.248:8000

Port: https 443/TCP

TargetPort: 443/TCP

NodePort: https 31890/TCP

Endpoints: 192.168.66.248:443

Session Affinity: None

External Traffic Policy: Cluster

Events: <none>

Now you can use hub at [http://192.168.66.248:8000](http://192.168.66.248:8000/) (admin/admin)

\*\* Note that if you encouner a permission error, please check your disk permissoins \*\*

### **五. install k8s dashboard**

进入如下目录：

/home/henry/kubeos/pods/webui（只是示意，关键是进入webui 目录）

执行

Kubedash.sh 即可，会输出token,port等，建议这时候记录一下

默认只有firefox 支持，通过配置可以支持chrome

支持chrome 配置:参考如俩博客

<https://www.jianshu.com/p/8021285cc37d>

### **六. Spark k8安装**

进入：/root/kubebsp/hadoop-cluster（阿里云机器有，具体下载，问题可以找许震）

执行deploy.sh

runSpk.py 是提交作业的脚本