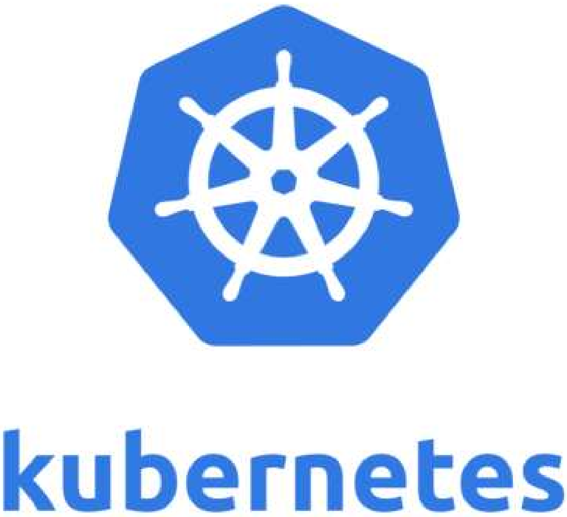
온 프레미스(On-premise) 환경에서 쿠버네티스 구축하기 (Ansible+Kubespray)



Requirement

지원하는 리눅스

- Container Linux by CoreOS
- Debian Buster, Jessie, Stretch, Wheezy
- Ubuntu 16.04, 18.04
- CentOS/RHEL 7
- Fedora 28
- Fedora/CentOS Atomic
- openSUSE Leap 42.3/Tumbleweed
- Oracle Linux 7

노드 설정

- 마스터

  최소 메모리: 1500MB

- 워커노드

  최소 메모리: 1024MB

- 모든 노드

  1. Openssh-server 설치

     1.1 sudo apt-get install openssh-server

  2. Firewalls 비활성화
  3. IPv4 Forwarin 활성화

     3.1 /etc/sysctl.conf에서 **net.ipv4.ip_forward=1** 주석 제거

     3.2 sudo reboot

  4. 앤서블 작업용 서버 ssh key를 모든 노드에 복사

     4.1 ssh-keygen –t rsa

     - 입력 값은 모두 패스.

     4.2 ~/.ssh/id_rsa.pub을 모든 노드의 ~/.ssh/authorized_keys로 복사

     4.3 chmod 700 ~/.ssh/authorized_keys

  5. 사설 IP 주소를 가짐
  6. 앤서블 v2.7.8 이상 설치
  7. 절전모드 풀기

     6.1 /etc/systemd/logind.conf에서 **HandleLidswitch=ignore** 주석 제거

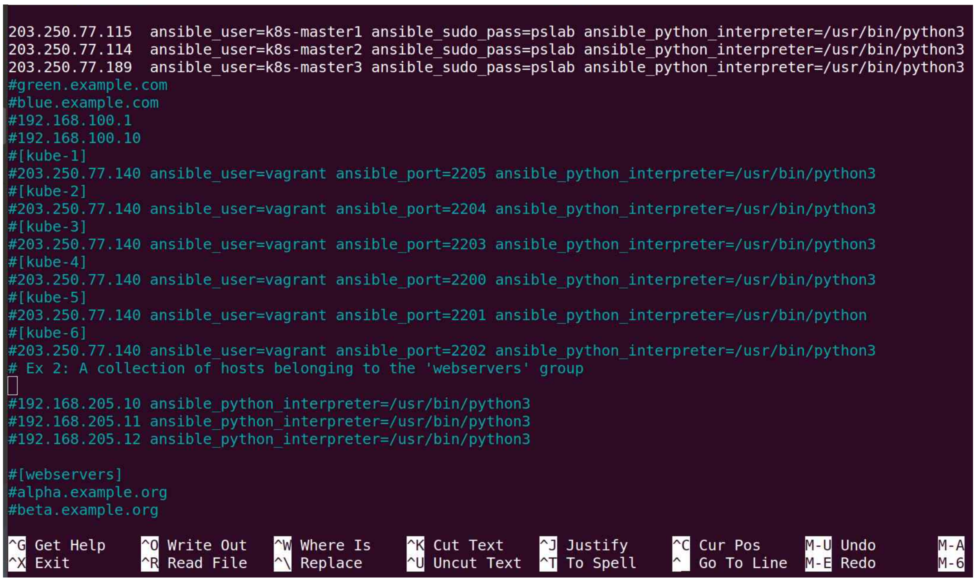
     6.2 sudo systemctl restart systemd-logind

Install

Ansible Ping Test

[절차]

1. sudo nano /etc/ansible/hosts
2. add node info
   - *NODE_IP*
   - ansible_user=*NODE_USER*
   - ansible_sudo_pass=*NODE_USER_PASSWORD*



```
203.250.77.115  ansible_user=k8s-master1 ansible_sudo_pass=pslab ansible_python_interpreter=/usr/bin/python3
203.250.77.114  ansible_user=k8s-master2 ansible_sudo_pass=pslab ansible_python_interpreter=/usr/bin/python3
203.250.77.189  ansible_user=k8s-master3 ansible_sudo_pass=pslab ansible_python_interpreter=/usr/bin/python3
#green.example.com
#blue.example.com
#192.168.100.1
#192.168.100.10
#[kube-1]
#203.250.77.140 ansible_user=vagrant ansible_port=2205 ansible_python_interpreter=/usr/bin/python3
#[kube-2]
#203.250.77.140 ansible_user=vagrant ansible_port=2204 ansible_python_interpreter=/usr/bin/python3
#[kube-3]
#203.250.77.140 ansible_user=vagrant ansible_port=2203 ansible_python_interpreter=/usr/bin/python3
#[kube-4]
#203.250.77.140 ansible_user=vagrant ansible_port=2200 ansible_python_interpreter=/usr/bin/python3
#[kube-5]
#203.250.77.140 ansible_user=vagrant ansible_port=2201 ansible_python_interpreter=/usr/bin/python
#[kube-6]
#203.250.77.140 ansible_user=vagrant ansible_port=2202 ansible_python_interpreter=/usr/bin/python3
# Ex 2: A collection of hosts belonging to the 'webservers' group

#192.168.205.10 ansible_python_interpreter=/usr/bin/python3
#192.168.205.11 ansible_python_interpreter=/usr/bin/python3
#192.168.205.12 ansible_python_interpreter=/usr/bin/python3

#[webservers]
#alpha.example.org
#beta.example.org
```

Kubespray

[절차]

1. git clone https://github.com/kubernetes-sigs/kubespray.git

2. 의존성 모듈 설치

~/kubespray$ sudo pip install -r requirements.txt

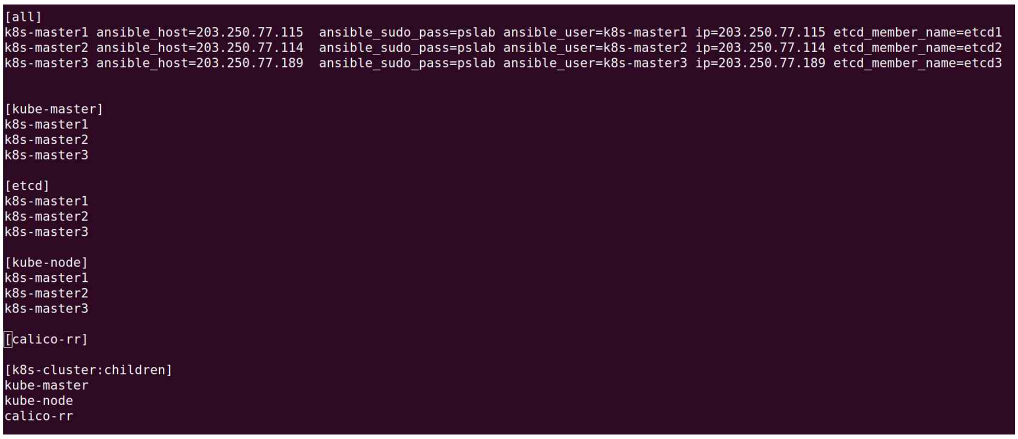
3. 쿠버네티스 구축을 하기 위한 Inventory 만들기

~/kubespray$ cp -rfp inventory/sample inventory/mycluster

~/kubespray$ declare -a IPS=(10.10.1.3 10.10.1.4 10.10.1.5)

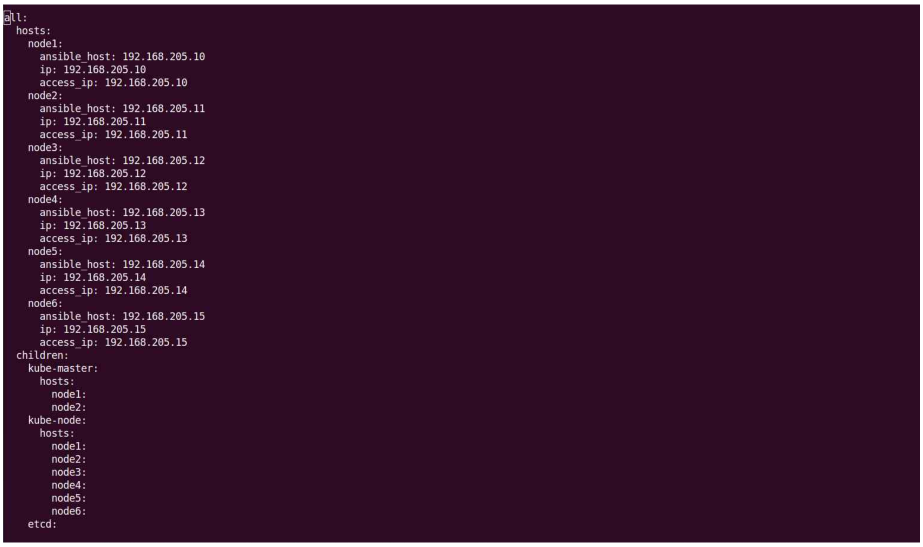
~/kubespray$ CONFIG_FILE=inventory/mycluster/hosts.yml python3
contrib/inventory_builder/inventory.py ${IPS[@]}

위에 과정은 파일 작성을 도와주는 절차이므로 생략하고 직접 hosts.yml or inventory.ini 파일로 작성해도 된다. 위에 절차대로 진행했다면 작성된 파일을 확인하여 자신의 환경에 맞게 변경해야 한다.



```
[all]
k8s-master1 ansible_host=203.250.77.115  ansible_sudo_pass=pslab ansible_user=k8s-master1 ip=203.250.77.115 etcd_member_name=etcd1
k8s-master2 ansible_host=203.250.77.114  ansible_sudo_pass=pslab ansible_user=k8s-master2 ip=203.250.77.114 etcd_member_name=etcd2
k8s-master3 ansible_host=203.250.77.189  ansible_sudo_pass=pslab ansible_user=k8s-master3 ip=203.250.77.189 etcd_member_name=etcd3


[kube-master]
k8s-master1
k8s-master2
k8s-master3

[etcd]
k8s-master1
k8s-master2
k8s-master3

[kube-node]
k8s-master1
k8s-master2
k8s-master3

[calico-rr]

[k8s-cluster:children]
kube-master
kube-node
calico-rr
```

[example. inventory.ini]



```
all:
  hosts:
    node1:
      ansible_host: 192.168.205.10
      ip: 192.168.205.10
      access_ip: 192.168.205.10
    node2:
      ansible_host: 192.168.205.11
      ip: 192.168.205.11
      access_ip: 192.168.205.11
    node3:
      ansible_host: 192.168.205.12
      ip: 192.168.205.12
      access_ip: 192.168.205.12
    node4:
      ansible_host: 192.168.205.13
      ip: 192.168.205.13
      access_ip: 192.168.205.13
    node5:
      ansible_host: 192.168.205.14
      ip: 192.168.205.14
      access_ip: 192.168.205.14
    node6:
      ansible_host: 192.168.205.15
      ip: 192.168.205.15
      access_ip: 192.168.205.15
  children:
    kube-master:
      hosts:
        node1:
        node2:
    kube-node:
      hosts:
        node1:
        node2:
        node3:
        node4:
        node5:
        node6:
    etcd:
```

[example. hosts.yml]

4. 클러스터 전체 설정 확인

```
~/kubespray$ cat inventory/mycluster/group_vars/all/all.yml
~/kubespray$ cat inventory/mycluster/group_vars/k8s-cluster/k8s-cluster.yml
```

5. 앤서블 플레이북으로 쿠버네티스 배포

```
~/kubespray$ ansible-playbook –i inventory/mycluster/hosts.yml
                --become --become-user=root cluster.yml
```

설치 중에 에러가 난다면 -vvvvvv 옵션을 사용하여 debug한다.

After Installed

kubectl 설정

[절차]

1. mkdir -p ~/.kube
2. cp -i /etc/kubernetes/admin.conf ~/.kube/config
3. chown $USER:$USER ~/.kube/config
4. check 'kubectl get pods —all-namespaces'

Docker sudo 명령어 없이 사용하는 법

[절차]

1. sudo usermod -aG docker $USER
2. sudo systemctl reboot