DC/OS Install on CentOS

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1. Using openstack to create three VMs,

Size: m1.xlarge,
Image: download from: http://cloud.centos.org/centos/7/images/
In a CentOS cloud image, the login account is centos.
Key Pair login over SSH

2. Install DCOS on CentOS

- Install CentOS for each machine (ensure can ssh to each machine)

1)Bootstrap Node

$ mkdir /opt/mesosphere && cd /opt/mesosphere
*Create ssh key and copy to cluster node:
$ ssh-keygen -t rsa
$ ssh-copy-id <username>@<cluster_node>
OR
$ cat ~/.ssh/id_rsa.pub | ssh username@remote_host "mkdir -p ~/.ssh && cat >> ~/.ssh/authorized_keys"

2)Cluster Node

*Disable sudo password
add the following at the end of /etc/sudoers
%wheel ALL=(ALL) NOPASSWD: ALL
<username> ALL=(ALL) NOPASSWD: ALL

- Install Docker on CentOS for each machine

1) Upgrade CentOS to 7.2:

$ sudo yum upgrade --assumeyes --tolerant
$ sudo yum update --assumeyes

2) Verify that the kernel is at least 3.10:

$ uname -r
3.10.0-327.10.1.el7.x86_64

3) Enable OverlayFS:

$ sudo tee /etc/modules-load.d/overlay.conf <<-'EOF'
overlay
EOF

4) Reboot to reload kernel modules:

$ reboot

5) Verify that OverlayFS is enabled:
$ lsmod | grep overlay
overlay

6) Configure yum to use the Docker yum repo:
$ sudo tee /etc/yum.repos.d/docker.repo <<-'EOF'
[dockerrepo]
name=Docker Repository
baseurl=https://yum.dockerproject.org/repo/main/centos/$releasever/
enabled=1
gpgcheck=1
gpgkey=https://yum.dockerproject.org/gpg
EOF

7) Configure systemd to run the Docker Daemon with OverlayFS:
$ sudo mkdir -p /etc/systemd/system/docker.service.d && sudo tee
/etc/systemd/system/docker.service.d/override.conf <<- EOF
[Service]
ExecStart=
ExecStart=/usr/bin/docker daemon --storage-driver=overlay -H fd://
EOF

8) Install the Docker engine, daemon, and service:
$ sudo yum install -y
https://yum.dockerproject.org/repo/main/centos/7/Packages/docker-engine-1.11.2-1.el7.
centos.x86_64.rpm
$ sudo systemctl start docker
$ sudo systemctl enable docker
Created symlink from /etc/systemd/system/multi-user.target.wants/docker.service to
/usr/lib/systemd/system/docker.service.

9) Test that Docker is properly installed:
$ docker info

- Firewall must be stopped and disabled:
  $ sudo systemctl stop firewalld && sudo systemctl disable firewalld

- Bootstrap Node:
  $ sudo yum -y install epel-release
  $ sudo yum -y install python-pip
  $ sudo pip install virtualenv

$ sudo docker pull nginx
$ yum install -y ntp nano

- Cluster Node:
  * Install data compression tool:
  $ sudo yum install -y tar xz unzip curl ipset ntp nano
  * Update permissions[1]:
  $ sudo sed -i s/SELINUX=enforcing/SELINUX=permissive/g /etc/selinux/config &&
  sudo groupadd nogroup &&
  sudo sysctl -w net.ipv6.conf.all.disable_ipv6=1 &&
  sudo sysctl -w net.ipv6.conf.default.disable_ipv6=1 &&
  sudo reboot

3. Advanced DC/OS Installation

bootstrap node:

- Create a directory
  $ mkdir -p genconf
- Create a configuration file and save as genconf/config.yaml
  $ nano /etc/resolv.conf
  add dns_search to your config.yaml file
  config.yaml:
  ---
  bootstrap_url: http://10.11.10.15:8848
  cluster_name: 'dcos'
  exhibitor_storage_backend: static
  ip_detect_filename: /genconf/ip-detect
  master_discovery: static
  master_list:
  - 10.11.10.12
  resolvers:
  - 10.11.10.5
  - 8.8.8.8

- Create a ip-detect script
  genconf/ip-detect:

  #!/usr/bin/env bash
  set -o nounset -o errexit
  export PATH=/usr/sbin:/usr/bin:$PATH

echo $(ip addr show eth0 | grep -Eo '[0-9]{1,3}\.[0-9]{1,3}\.[0-9]{1,3}\.[0-9]{1,3}' | head -1)

- Copy your private SSH key to genconf/ssh_key
  $ cp /root/.ssh/id_rsa genconf/ssh_key && chmod 0600 genconf/ssh_key
- Download the DC/OS installer
  $ curl -O https://downloads.dcos.io/dcos/stable/dcos_generate_config.sh
- Run this command to generate your customized DC/OS build file
  $ sudo bash dcos_generate_config.sh
- run this command to host the DC/OS install package through an nginx Docker container
  $ sudo docker run -d -p <your-port>:80 -v $PWD/genconf/serve:/usr/share/nginx/html:ro nginx

- SSH to your master nodes
  $ ssh centos@10.11.10.12
  $ mkdir /tmp/dcos && cd /tmp/dcos
  $ curl -O http://10.11.10.15:8848/dcos_install.sh
  $ sudo bash dcos_install.sh master

- SSH to your agent nodes
  $ ssh centos@10.11.10.14
  $ mkdir /tmp/dcos && cd /tmp/dcos
  $ curl -O http://10.11.10.15:8848/dcos_install.sh
  $ sudo bash dcos_install.sh slave

4. Installing the CLI

- Download the DC/OS CLI binary to /usr/local/bin/
  $ curl -O https://downloads.dcos.io/binaries/cli/linux/x86-64/dcos-1.8/dcos
- Make the CLI binary executable
  $ chmod +x dcos
- Point the CLI to your DC/OS master node
  $ ./dcos config set core.dcos_url http://10.11.10.12
  [core.dcos_url]: set to 'http://10.11.10.12'

- Authenticate your CLI with master node
  $ ./dcos auth login

  Please go to the following link in your browser:

  http://10.11.10.12/login?redirect_uri=urn:ietf:wg:oauth:2.0:oob

  Enter OpenID Connect ID Token:

eyJ0eXAiOiJKV1QiLCJhbGciOiJSUzI1NiIsImtpZCI6Ik9UQkVOakZFTWtWQ09V
RTRPRVpGTlRNMFJrWXlRa015Tnprd1JrSkVRemRCTWpBM1FqYzVOZyJ9.ey
JlbWFpbCI6ImZkaW5nODdAaG90bWFpbC5jb20iLCJlbWFpbF92ZXJpZmllZCI6d
HJ1ZSwiaXNzIjoiaHR0cHM6Ly9kY29zLmF1dGgwLmNvbS8iLCJzdWIiOiJnaXRo
dWJ8MTY5NDQ1MTUiLCJhdWQiOiIzeUY1VE9TemRsSTQ1UTF4c3B4emVvR0
JlOWZOeG05bSIsImV4cCI6MTQ3ODAyMTUwMSwiaWF0IjoxNDc3NTg5NTAxf
Q.FRkdDvogBdcVfBhDS9fuk2cW52Ar3bqPD0LOvFp4es9x0R6j-6Ax3wVzqM7so
AZq4X-yKslCqly73HNXKlwzdudEnc81-O9T0EqqzeFcSjMtlpzR5uj8t_6J4aDwd7
M2J1S7KkOQTwu6lEXS9UQ5c12wnYcU0upoWYNaXrM3NP27hTp-d6T3uXgbU
s3UyApuPpCMPRG9H8SNztGlFOxvoXo9czSlw6u8wReMtBo8Zq1VGZzq2jgFVo
Wl9VvKuDoWGc1wskPmu49N0vCCRn5eZeeKljrSO8eCvwMnGOkiD1g8U26PG
ghzDC1OHZ_3T9d-WFk33jbcWtxwN70OXofVWw
Login successful!

- Enter dcos to get started
  ./dcos
  Command line utility for the Mesosphere Datacenter Operating System (DC/OS). The Mesosphere DC/OS is a distributed operating system built around Apache Mesos. This utility provides tools for easy management of a DC/OS installation.

  Available DC/OS commands:

auth	Authenticate to DC/OS cluster
config	Manage the DC/OS configuration file
help	Display help information about DC/OS
job	Deploy and manage jobs in DC/OS
marathon	Deploy and manage applications to DC/OS
node	Administer and manage DC/OS cluster nodes
package	Install and manage DC/OS software packages
service	Manage DC/OS services
task	Manage DC/OS tasks

  Get detailed command description with 'dcos <command> --help'.

5. Use your cluster

- Run this command to launch a containerized sample app on DC/OS
  $ dcos marathon app add https://dcos.io/docs/1.8/usage/nginx.json

- see the nginx web server up and running

```
$ ./dcos node
 HOSTNAME        IP                      ID
10.11.10.14  10.11.10.14  29fd0bb2-f5c5-4b11-b9d4-e9e6e50a191b-S0

$ ./dcos service
NAME          HOST     ACTIVE  TASKS   CPU     MEM   DISK  ID
marathon   10.11.10.12   True     1    0.0625  128.0  64.0
29fd0bb2-f5c5-4b11-b9d4-e9e6e50a191b-0000
metronome  10.11.10.12   True     0     0.0     0.0   0.0
29fd0bb2-f5c5-4b11-b9d4-e9e6e50a191b-0001

$ ./dcos task
NAME   HOST         USER  STATE  ID
nginx  10.11.10.14  root    R    nginx.b7084337-9c74-11e6-add0-70b3d5800001
```