NSD CLOUD DAY05

1. 案例1: 安装Docker 2 安例2: 每像其木垛件

3. 案例3:镜像与容器常用指令

1 案例1:安装Docker

1.1 问题

本案例要求配置yum源并安装Docker:

- 准备两台虚拟机, IP为192.168.1.10和192.168.1.20
- 安装docker-engine 和 docker-engine-selinux
- 关闭防火墙

1.2 步骤

实现此案例需要按照如下步骤进行。

步骤一:配置yum源

1)配置第三方yum源(真机操作)

- 01. [root@room9pc01~] # mkdir /var/ftp/docker
- 02. [root@room9pc01~] # mv docker- engine- * /var/ftp/docker
- 03. [root@room9pc01~] # ls /var/ftp/docker
- 04. docker- engine- 1.12.1- 1.el7.centos.x86 64.rpm
- 05. docker- engine- selinux- 1.12.1- 1.el7.centos.noarch.rpm
- 06. [root@room9pc01 ~] # createrepo /var/ftp/docker/
- 07. Spawning worker 0 with 1 pkgs
- 08. Spawning worker 1 with 1 pkgs
- 09. Spawning worker 2 with 0 pkgs
- 10. Spawning worker 3 with 0 pkgs
- 11. Spawning worker 4 with 0 pkgs
- 12. Spawning worker 5 with 0 pkgs
- 13. Workers Finished
- 14. Saving Primary metadata
- 15. Saving file lists metadata
- 16. Saving other metadata
- 17. Generating sqlite DBs
- 18. Sqlite DBs complete

```
01
      [root@localhost ~] # echo docker1 > /etc/hostname
02.
      [root@localhost ~] # hostname docker1
03.
      [root@localhost ~] # echo docker2 > /etc/hostname
04.
      [root@localhost ~] # hostname docker2
05.
      [root@docker1~] # v im /etc/sy sconf ig/network- scripts/if cf g- eth0
06.
      # Generated by dracut initrd
07.
      DEVICE="eth0"
08.
      ONBOOT="yes"
      IPV6INIT="no"
09.
10.
      IPV4_FAILURE_FATAL="no"
      NM CONTROLLED="no"
11.
12.
      TYPE="Ethernet"
13.
      BOOTPROTO="static"
      IPA DDR="192, 168, 1, 10"
14.
15.
      PREFIX=24
16.
      GATEWAY=192, 168, 1, 254
17.
      [root@docker1~] # systemctl restart network
18.
19.
      [root@docker2 ~] # v im /etc/sy sconf ig/network- scripts/if cf g- eth0
20.
      # Generated by dracut initrd
21.
      DEVICE="eth0"
22.
      ONBOOT="yes"
23.
      IPV6INIT="no"
24.
      IPV4 FAILURE FATAL="no"
25.
      NM CONTROLLED="no"
26.
      TYPE="Ethernet"
27.
      BOOTPROTO="static"
28.
      IPA DDR="192, 168, 1, 20"
29.
      PREFIX=24
30.
      GATEWAY=192.168.1.254
```

3)配置yum客户端(docker1和docker2主机同样操作)

[root@docker1~] # systemctl restart network

```
01. [root@docker1~] # v im /etc/y um.repos.d/local.repo
02. [local_repo]
03. name=CentOS $releasev er - Base
04. baseurl="ftp://192.168.1.254/sy stem"
```

enabled=1

31.

05.

```
06.
       gpgcheck=1
07.
08.
       [loca]
09.
       name=local
10.
       baseurl="ftp://192.168.1.254/docker"
11.
       enabled=1
12.
       gpgcheck=0
13.
14.
       [root@docker2 ~] # v im /etc/y um.repos.d/local.repo
15.
       [local_repo]
16.
       name=CentOS-$releasever - Base
17.
       baseurl="ftp://192.168.1.254/system"
18.
       enabled=1
19.
       gpgcheck=1
20.
21.
       [loca]
22.
       name=local
23.
       baseurl="ftp://192.168.1.254/docker"
24.
       enabled=1
25.
       gpgcheck=0
```

4)安装docker(docker1和docker2主机同样操作)

```
01.
      [root@docker1~] #yum-y install docker-engine
02.
      [root@docker1~] # sy stemctl restart docker
03.
      [root@docker1~] # systemctl enable docker
04.
      [root@docker1~]#ifconfig //有docker0说明环境部署完成
05.
      docker0: flags=4099<UP, BROADCAST, MULTICAST> mtu 1500
06.
           inet 172.17.0.1 netmask 255.255.0.0 broadcast 0.0.0.0
07.
           ether 02:42:3e:e7:3f:6e txqueuelen 0 (Ethernet)
08.
           RX packets 0 by tes 0 (0.0 B)
09.
           RX errors 0 dropped 0 overruns 0 frame 0
10.
           TX packets 0 by tes 0 (0.0 B)
11.
           TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
12.
      [root@docker2 ~] # docker version
                                           //查看版本
13.
14.
      [root@docker2 ~] # y um - y install docker- engine
15.
      [root@docker2 ~] # sy stemctl restart docker
                                                                             Top
16.
      [root@docker2 ~] # sy stemctl enable docker
17.
      [root@docker2~]#ifconfig //有docker0说明环境部署完成
```

18. docker0: flags=4099<UP, BROADCAST, MULTICAST> mtu 1500 19. inet 172.17.0.1 netmask 255.255.0.0 broadcast 0.0.0.0 ether 02: 42: 53: 82: b9: d4 txqueuelen 0 (Ethernet) 20. 21. RX packets 0 by tes 0 (0.0 B) 22. RX errors 0 dropped 0 overruns 0 frame 0 23. TX packets 0 by tes 0 (0.0 B) 24. TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0 25. [root@docker2~]#dockerversion //查看版本

2 案例2:镜像基本操作

2.1 问题

本案例要求熟悉镜像的基本操作:

- 导入镜像
- 导出镜像
- 启动镜像

2.2 步骤

实现此案例需要按照如下步骤进行。

步骤一:docker镜像

1)下载镜像

- 01. [root@docker1 ~] # docker pull busy box
 02. Using default tag: latest
 03. latest: Pulling from library /busy box
 04. 8c5a7da1af bc: Pull complete
 05. Digest: sha256: cb63aa0641a885f 54de20f 61d152187419e8f 6b159ed11a251a09d115f dff 9bd
 06. Status: Downloaded newer image for busy box: latest
- 2)上传镜像
 - 01. [root@docker1~] # docker push busy box

3) 查看镜像

O1. [root@docker1~] # docker images

O2. REPOSITORY TAG IMAGE ID CREATED SIZE

03. busy box latest e1ddd7948a1c 4 weeks ago 1.163 MB

4) 查找busybox镜像

01. [root@docker1~] # docker search busy box

5)导出busybox镜像为busybox.tar

- 01. [root@docker1~] # docker save busy box: latest >busy box.tar
- 02. [root@docker1~]# Is
- 03. busy box.tar

6)导入镜像

- 01. [root@docker1~] # scp busy box.tar 192.168.1.20: /root
- 02. [root@docker2~]# ls
- 03. busy box.tar
- 04. [root@docker2 ~] # docker load <busy box.tar
- 05. f 9d9e4e6e2f 0: Loading layer [=
- 06. Loaded image: busy box: latest[\Rightarrow] 32.77 kB/1.378 MB
- 07. [root@docker2 ~] # docker images
- 08. REPOSITORY TAG IMAGE ID CREATED SIZE
- 09. busy box latest e1ddd7948a1c 4 weeks ago 1.163 MB

7)删除镜像

- 01. [root@docker2 ~] # docker rmi busy box
- 02. Untagged: busy box: latest
- 03. Deleted: sha256: e1ddd7948a1c31709a23cc5b7df e96e55f c364f 90e1cebcde0773a1b5a30dcda
- 04. Deleted: sha256: f 9d9e4e6e2f 0689cd752390e14ade48b0ec6f 2a488a05af 5ab2f 9ccaf 54c299

步骤二:一次性导入多个镜像

Top

01. [root@docker1~] # y um - y install unzip

```
02.
       [root@docker1~] # unzip docker_images.zip
03.
       Archive: docker_images.zip
04.
         creating: docker_images/
05.
        inflating: docker_images/nginx.tar
06.
        inflating: docker_images/redis.tar
07.
        inflating: docker_images/centos.tar
08.
        inflating: docker images/registry.tar
09.
        inflating: docker_images/ubuntu.tar
10.
       [root@docker1~]# ls
11.
       busy box.tar docker images docker images.zip eip
12.
       [root@docker1~] # cd docker images
13.
       [root@docker1docker_images] # Is
       centos.tar nginx.tar redis.tar registry.tar ubuntu.tar
14.
15.
       [root@docker1docker images] # docker images
       REPOSITORY
                         TAG
                                        IMAGE ID
                                                         CREATED
                                                                           SIZE
16.
17.
       busy box
                        latest
                                      e1ddd7948a1c
                                                         4 weeks ago
                                                                           1.163 MB
18.
       [root@docker1 docker_images] # for i in *; do docker load <$i; done
```

导入多个镜像如图-1所示:

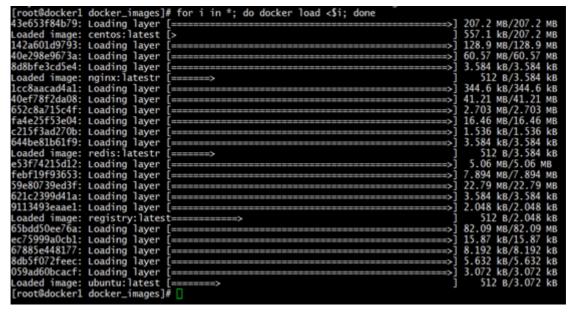


图-1

步骤三:启动镜像

1)启动centos镜像生成一个容器

启动镜像时若不知道后面的命令加什么:

- 1、可以猜(如:/bin/bash、/bin/sh)
- 2、可以不加后面的命令,默认启动

- 02. [root@7a652fc72a9f /] # ls /
- 03. anaconda-post.log bin dev etc home lib lib64 media mnt opt proc root run sbin sm
- 04. [root@7a652fc72a9f /] # cd /etc/y um. repos. d/
- 05. [root@7a652fc72a9f yum.repos.d] # ls
- 06. CentOS Base.repo CentOS Debuginfo.repo CentOS Sources.repo CentOS fasttrack.repo
- 07. CentOS CR.repo CentOS Media.repo CentOS Vault.repo
- 08. [root@7a652fc72a9f yum.repos.d] # rm rf C*
- 09. [root@7a652fc72a9f yum.repos.d] # ls
- 10. [root@7a652fc72a9f yum.repos.d] #vidvd.repo //在容器里面配置一个yum源
- 11. [local]
- 12. name=local
- 13. baseurl=ftp://192.168.1.254/system
- 14. enable=1
- 15. gpgcheck=0
- 16. [root@7a652fc72a9f yum.repos.d] # yum-y install net-tools //安装软件
- 17. [root@7a652fc72a9f yum.repos.d] # exit
- 18. exit

3 案例3:镜像与容器常用指令

3.1 问题

本案例要求掌握镜像与容器的常用命令:

- 镜像常用指令练习
- 容器常用指令练习

3.2 步骤

实现此案例需要按照如下步骤进行。

步骤一:镜像常用命令

1) 查看后台运行的容器

- 01. [root@docker1~] # docker run d nginx //启动nginx的镜像
- 02. [root@docker1~] # docker ps //查看后台运行的容器
- O3. CONTAINER ID IMAGE COMMAND CREATED STATUS
- 04. 56ec8154f8e0 nginx: latest "nginx g 'daemon off" 17 minutes ago Up 12 min

2)只显示容器ID Top

- 01. [root@docker1 docker_images] # docker ps q
- 02. 56ec8154f 8e0
- 03. 85c6b0b62235
- 04. f 7ee40a87af 5

3)显示所有的容器,包括没有启动的

01. [root@docker1 docker_images] # docker ps - a

4)显示所有的容器ID

```
01. [root@docker1docker_images] # docker ps - qa
```

- 02. 56ec8154f 8e0
- 03. 2b68c3960737
- 04. 85c6b0b62235
- 05. f 7ee40a87af 5
- 06. b261be571648
- 07. fb2fb8c3d7a8

5) 查看centos镜像历史(制作过程),如图-2所示:

01. [root@docker1docker_images] # docker history centos

图-2

7)删除镜像,启动容器时删除镜像会失败,先删除容器,再删除镜像

格式: docker rmi 镜像名

Top

01. [root@docker1docker_images] # docker rmi nginx //nginx为镜像名

02.

- 03. Error response from daemon: conflict: unable to remove repository reference "nginx" (m
- 04. [root@docker1docker_images] # docker stop 4f
- 05. 4f
- 06. [root@docker1docker_images] # docker rm 4f
- 07. 4f
- 08. [root@docker1docker_images] # docker rmi nginx //成功删除
- 09. Untagged: nginx: latest
- 10. Deleted: sha256: d1f d7d86a8257f 3404f 92c4474f b3353076883062d64a09232d95d94062745
- 11. Deleted: sha256: 4d765aea84ce4f56bd623e4fd38dec996a259af3418e2466d0e2067ed0ae8a
- 12. Deleted: sha256: 5d385be69c9c4ce5538e12e6e677727ebf19ca0afaff6f035d8043b5e413003
- 13. Deleted: sha256; adb712878b60bd7ed8ce661c91eb3ac30f41b67bf af ed321395863051596a8e
- 14. Deleted: sha256: 55a50a618c1b76f784b0b68a0b3d70db93b353fb03227ea6bd87f794cad929:
- 15. Deleted: sha256: e53f 74215d12318372e4412d0f 0eb3908e17db25c6185f 670db49aef 5271f 91l

8)修改镜像的名称和标签,默认标签为latest

01. [root@docker1docker_images] # docker tag centos: latest cen: v1

9) 查看镜像的底层信息,如图-3所示:

01. [root@docker1docker_images] # docker inspect centos

```
| Secretarian |
```

图-3

10)修改镜像的标签

```
01.
      [root@docker1docker_images] # docker tag centos: latest cen: v1
02.
      [root@docker1docker_images] # docker images
03.
      REPOSITORY TAG
                              IMAGE ID
                                            CREATED
                                                          SIZE
04.
                             e934aaf c2206 5 months ago
           cen
                   v1
05.
      [root@docker1docker_images] # docker rmi centos //删除centos
06.
      [root@localhost ~] # docker run - it centos
      //启动的时候,因为是用标签标签启动的,所以会重新通过ID下载
07.
08.
      [root@localhost ~] # docker run - it centos
      Unable to find image 'centos: latest' locally
09.
10.
      latest: Pulling from library /centos
11.
      Digest: sha256: 989b936d56b1ace20ddf855a301741e52abca38286382cba7f44443210e96d16
12.
      Status: Downloaded newer image for centos: latest
13.
      [root@localhost ~] # docker run - it cen: v1 //通过新建的标签启动cen: v1
```

步骤二:容器命令

1)关闭容器

命令: docker stop 容器ID

- 01. [root@docker1docker_images] # docker stop Of //Of为容器ID
- 02. Of

2)启动容器

- 01. [root@docker1docker_images] # docker start Of
- 02. Of

3)重启容器

- 01. [root@docker1docker_images] # docker restart Of
- 02. Of

4)删除容器

运行中删除不掉, 先关闭容器

- 01. [root@docker1docker_images] # docker rm Of //删除失败
- 02. Error response from daemon: You cannot remove a running container 0f 63706692e15134a
- 03. [root@docker1docker_images] # docker stop 0f //关闭容器
- 04. Of
- 05. [root@docker1docker_images] # docker rm 0f //删除成功
- 06. Of
- 07. [root@docker1docker_images]#

5)连接容器attach|exec

- 01. [root@docker1docker_images] # docker attach Of
- 02. [root@docker1docker_images] # docker ps //容器关闭
- 03. CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
- 04. [root@docker1 docker_images] # docker exec it 0f /bin/bash
- 05. [root@docker1docker_images] # docker ps //容器不会关闭
- 06. CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES

```
07.
      0b3c50284a1c centos:v1
                                 "/bin/bash" 15 minutes ago Up 15 minutes
                                                                                  tiny_lan
08.
09.
      [root@docker1docker_images] # docker top f7
                                                      //查看容器进程列表
10.
      [root@localhost ~] # docker run - itd centos: latest
11.
      [root@0b3c50284a1c /] # ps
12.
       PID TTY
                     TIME CMD
13.
         1?
                00:00:00 bash
14.
        13?
                 00:00:00 ps
15.
       [root@docker1 docker_images] # docker exec - it 85 /bin/bash
16.
      root@85c6b0b62235: /# sleep 50 &
17.
      [1]9
18.
      root@85c6b0b62235: /# exit
19.
      exit
20.
21.
22.
      [root@docker1docker_images] #docker top 85
23.
24.
      UID PID PPID C STIME
                                TTY
                                          TIME
                                                  CMD
25.
      root 2744 2729 0 18:01 pts/4 00:00:00 /bin/bash
```

6) 过滤查看mac和ip地址

```
    [ root@docker1 docker_images] # docker inspect - f '{{ . NetworkSettings. MacAddress}} ' 4f
    02: 42: ac: 11: 00: 03
    [ root@docker1 docker_images] # docker inspect - f '{{ . NetworkSettings. IPA ddress}} ' 4f
    172.17.0.3
```

7)修改nginx的显示内容

```
O1. [root@docker1 docker_images] # docker run - it nginx: latest O2.
```

[root@docker1 ~]# docker ps 🖊						
CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS	NAMES
56ec8154f8e0 🚩	nginx:latest	"nginx -g 'daemon off"	5 minutes ago	Up 18 seconds	80/tcp, 443/tcp	zen_darwi
85c6b0b62235	nginx: latest	"/bin/bash"	14 hours ago	Up 14 hours	80/tcp, 443/tcp	desperate
4f83871aa42e	nginx: latest	"/bin/bash"	14 hours ago	Up 14 hours	80/tcp, 443/tcp	backstabb
f7ee40a87af5	centos: latest	"/bin/bash"	14 hours ago	Up 14 hours	. ,,	goofy_cra
[root@docker1 ~]#	docker exec -it 56	/bin/bash				. ,-

- 01. [root@docker1docker_images] # docker exec it 56 /bin/bash
- 02. root@56ec8154f8e0: /# nginx T /usr/share/nginx/html/
- 03. nginx: invalid option: "/usr/share/nginx/html/" //查找并显示结果
- 04. root@56ec8154f8e0: /# echo aaa > /usr/share/nginx/html/index.html
- 05. //修改主页显示的内容
- 06. root@56ec8154f8e0: /# nginx T
- 07. root@56ec8154f8e0: /# cat /usr/share/nginx/html/index.html
- 08. aaa

8) 过滤查看nginx的ip地址

- 01. [root@docker1~] # docker inspect f '{{ .NetworkSettings.IPAddress}}' 56
- 02. 172.17.0.5
- 03. [root@docker1~] # curl 172.17.0.5
- 04. aaa