

TTS 10.0 COOKBOOK

(NSD CLOUD DAY02)

版本编号 10.0

2018-08

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NSD CLOUD DAY02

1. 案例 1：配置 yum 仓库

• 问题

本案例要求把三个镜像配置 yum 源：

- CentOS7-1708 光盘内容作为仓库源
- 配置 RHEL7-extras 内容加入仓库源
- RHEL7OSP-10 光盘中包含多个目录，每个目录都是仓库源（可以使用脚本生成）

• 步骤

实现此案例需要按照如下步骤进行。

步骤一：配置 yum 仓库

- 1) 使用模板文件创建两台新的虚拟机，day01 案例中有用模板文件创建虚拟机的详细步骤，此处不再赘述。
- 2) 配置 CentOS7-1708，RHEL7-extras，RHEL7OSP-10 的 yum 源（共 12 个，真机操作）

警告：仅 yum 配置的第一个源（系统源）为 gpgcheck=1 需要导入公钥，其他的都是 gpgcheck=0，否则安装会报错。

```
[root@room9pc01 ~]# mkdir /var/ftp/system
[root@room9pc01 ~]# mkdir /var/ftp/extras
[root@room9pc01 ~]# mkdir /var/ftp/HEL7OSP
[root@room9pc01 ~]# vim /etc/fstab
/iso/RHEL7OSP-10.iso /var/ftp/HEL7OSP iso9660 defaults 0 0
/iso/CentOS7-1708.iso /var/ftp/system iso9660 defaults 0 0
/iso/RHEL7-extras.iso /var/ftp/extras iso9660 defaults 0 0
[root@room9pc01 ~]# mount -a
mount: /dev/loop0 is write-protected, mounting read-only
mount: /dev/loop1 is write-protected, mounting read-only
mount: /dev/loop2 is write-protected, mounting read-only
[root@room9pc01 ~]# vim /etc/yum.repos.d/local.repo
[local_repo]
name=CentOS-$releasever - Base
baseurl="ftp://192.168.1.254/system"
enabled=1
gpgcheck=1

[local_extras]
name=extras
baseurl="ftp://192.168.1.254/extras"
enabled=1
gpgcheck=0

[local_devtools-rpms]
name=devtools-rpms
baseurl="ftp://192.168.1.254/HEL7OSP/rhel-7-server-openstack-10-devtools-rpms"
```

```
enabled=1
gpgcheck=0

[2local_optools-rpms]
name=optools-rpms
baseurl="ftp://192.168.1.254/HEL70SP/rhel-7-server-openstack-10-optools-rpms"
enabled=1
gpgcheck=0

[3local_rpms]
name=rpms
baseurl="ftp://192.168.1.254/HEL70SP/rhel-7-server-openstack-10-rpms"
enabled=1
gpgcheck=0

[4local_tools-rpms]
name=tools-rpms
baseurl="ftp://192.168.1.254/HEL70SP/rhel-7-server-openstack-10-tools-rpms"
enabled=1
gpgcheck=0

[5local_mon-rpms]
name=mon-rpms
baseurl="ftp://192.168.1.254/HEL70SP/rhel-7-server-rhceph-2-mon-rpms"
enabled=1
gpgcheck=0

[6local_osd-rpms]
name=osd-rpms
baseurl="ftp://192.168.1.254/HEL70SP/rhel-7-server-rhceph-2-osd-rpms"
enabled=1
gpgcheck=0

[7local_rhceph-2-tools-rpms]
name=rhceph-2-tools-rpms
baseurl="ftp://192.168.1.254/HEL70SP/rhel-7-server-rhceph-2-tools-rpms"
enabled=1
gpgcheck=0

[8local_agent-rpms]
name=agent-rpms
baseurl="ftp://192.168.1.254/HEL70SP/rhel-7-server-rhscon-2-agent-rpms"
enabled=1
gpgcheck=0

[9local_installer-rpms]
name=installer-rpms
baseurl="ftp://192.168.1.254/HEL70SP/rhel-7-server-rhscon-2-installer-rpms"
enabled=1
gpgcheck=0

[10local_rhscon-2-main-rpms]
name=rhscon-2-main-rpms
baseurl="ftp://192.168.1.254/HEL70SP/rhel-7-server-rhscon-2-main-rpms"
enabled=1
gpgcheck=0
```

2. 案例 2 : 配置 DNS 服务器 :

- 问题

本案例要求掌握 DNS 服务器的配置：

- 允许 DNS 服务器为所有的客户端提供服务
- 解析域名 openstack.tedu.cn
- 解析域名 nova.tedu.cn

• 方案

此实验的整体方案需要三台机器，openstack 作为主节点，nova 作为额外节点，真机做为 DNS 和 NTP 的服务器(这里不再在表-1 中体现，在真机上面直接配置即可)，提供域名解析和时间同步服务，具体情况如表-1 所示：

表-1

主机名	内存大小	IP
openstack.tedu.cn	8.5G	192.168.1.1
nova.tedu.cn	6.5G	192.168.1.2

• 步骤

实现此案例需要按照如下步骤进行。

步骤一：配置 DNS（真机操作）

```
[root@room9pc01 ~]# yum -y install bind bind-chroot
[root@room9pc01 ~]# vim /etc/named.conf
options {
    listen-on port 53 { 192.168.1.3; };    //修改 ip
    allow-query    { any; };              //允许所有
    recursion yes;
    forwarders { 172.40.1.10; };          //转发 dns,真机的服务器地址

    dnssec-enable no;
    dnssec-validation no;
};
[root@room9pc01 ~]# systemctl restart named
```

步骤二：两台虚拟机配置静态 ip

注意：两台主机同样操作，改一下 ip 即可（以 openstack.tedu.cn 为例）

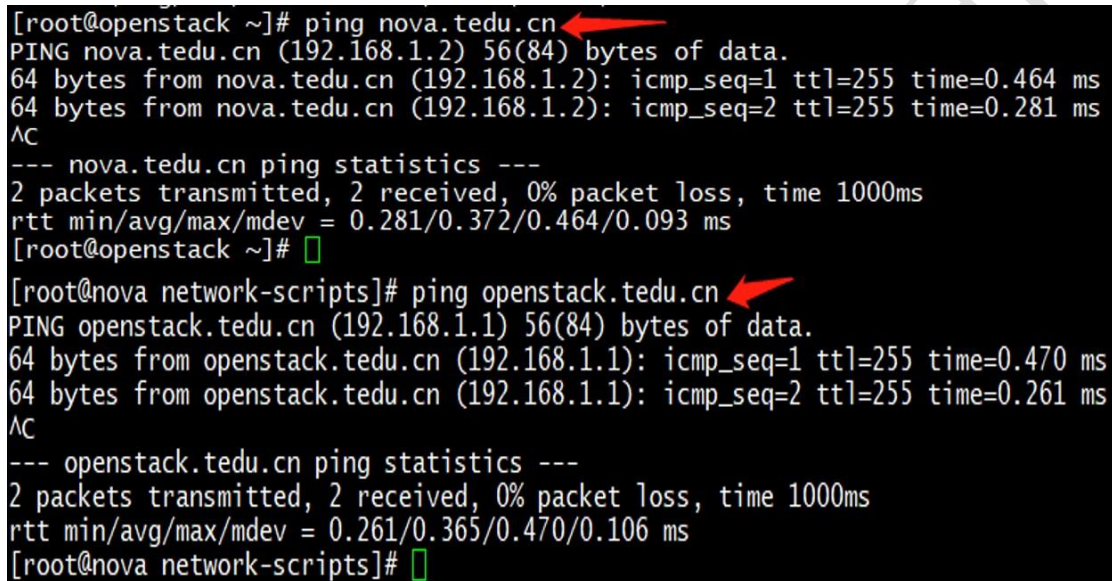
```
[root@localhost ~]# echo openstack.tedu.cn > /etc/hostname
[root@localhost ~]# hostname openstack.tedu.cn //另外一台主机改名为 nova.tedu.cn
[root@openstack ~]# vim /etc/sysconfig/network-scripts/ifcfg-eth0
# Generated by dracut initrd
DEVICE="eth0"
ONBOOT="yes"
IPV6INIT="no"
IPV4_FAILURE_FATAL="no"
NM_CONTROLLED="no"
TYPE="Ethernet"
```

```
BOOTPROTO="static"  
IPADDR="192.168.1.1"  
PREFIX=24  
GATEWAY=192.168.1.254  
[root@openstack ~]# systemctl restart network
```

步骤三：域名解析

```
[root@openstack ~]# vim /etc/hosts  
//在 openstack.tedu.cn 和 nova.tedu.cn 主机上面操作  
192.168.1.1 openstack.tedu.cn  
192.168.1.2 nova.tedu.cn
```

测试能否 ping 通，如图-1 所示：



```
[root@openstack ~]# ping nova.tedu.cn  
PING nova.tedu.cn (192.168.1.2) 56(84) bytes of data.  
64 bytes from nova.tedu.cn (192.168.1.2): icmp_seq=1 ttl=255 time=0.464 ms  
64 bytes from nova.tedu.cn (192.168.1.2): icmp_seq=2 ttl=255 time=0.281 ms  
^C  
--- nova.tedu.cn ping statistics ---  
2 packets transmitted, 2 received, 0% packet loss, time 1000ms  
rtt min/avg/max/mdev = 0.281/0.372/0.464/0.093 ms  
[root@openstack ~]#  
[root@nova network-scripts]# ping openstack.tedu.cn  
PING openstack.tedu.cn (192.168.1.1) 56(84) bytes of data.  
64 bytes from openstack.tedu.cn (192.168.1.1): icmp_seq=1 ttl=255 time=0.470 ms  
64 bytes from openstack.tedu.cn (192.168.1.1): icmp_seq=2 ttl=255 time=0.261 ms  
^C  
--- openstack.tedu.cn ping statistics ---  
2 packets transmitted, 2 received, 0% packet loss, time 1000ms  
rtt min/avg/max/mdev = 0.261/0.365/0.470/0.106 ms  
[root@nova network-scripts]#
```

图-1

3. 案例 3：配置 NTP 服务器

• 问题

本案例要求配置 NTP 时间同步服务器：

- 将 NTP 服务与 DNS 服务部署在同一台主机上
- 确认 NTP 服务器的时区是东八区
- 确认 NTP 服务器的时间准确
- 计划安装 openstack 的服务器与 NTP 服务器进行时间校正

• 步骤

实现此案例需要按照如下步骤进行。

步骤一：配置 NTP 时间同步（真机操作）

```
[root@room9pc01 ~]# yum -y install chrony
[root@room9pc01 ~]# vim /etc/chrony.conf
server ntp1.aliyun.com iburst
bindaddress 0.0.0.0
allow 0/0           //允许所有人使用我的时间服务器
cmdallow 127.0.0.1   //控制指令
[root@room9pc01 ~]# systemctl restart chronyd
[root@room9pc01 ~]# netstat -antup | grep chronyd
udp                0                0 0.0.0.0:123        0.0.0.0:*
23036/chronyd
udp                0                0 127.0.0.1:323      0.0.0.0:*
23036/chronyd
[root@room9pc01 ~]# chronyc sources -v //出现*号代表 NTP 时间可用
^* 120.25.115.20      2  6  17  62  -753us[-7003us] +/- 24ms
```

4. 案例 4：环境准备

• 问题

本案例要求准备基础环境，为安装 openstack 做准备：

- 准备 openstack 的基础环境

• 步骤

实现此案例需要按照如下步骤进行。

步骤一：准备基础环境

1) 配置 yum 源

备注：只有系统源的 gpgcheck=1，其他的都是 gpgcheck=0

```
[root@room9pc01 ~]# scp /etc/yum.repos.d/local.repo \
192.168.1.1:/etc/yum.repos.d/ //拷贝给 openstack.tedu.cn 这台主机
[root@room9pc01 ~]# scp /etc/yum.repos.d/local.repo \
192.168.1.2:/etc/yum.repos.d/ //拷贝给 nova.tedu.cn 这台主机
```

步骤二：配置 ip

备注：配置 eth0 为公共网络，网络地址 192.168.1.0/24（已经配置过）

配置 eth1 为隧道接口，网络地址 192.168.2.0/24

1) 给 openstack.tedu.cn 主机添加 eth1 网卡

```
[root@room9pc01 networks]# virsh -c qemu:///system attach-interface openstack bridge
private2 --model virtio
Interface attached successfully //添加成功
[root@openstack ~]# cd /etc/sysconfig/network-scripts
[root@openstack network-scripts]# cp ifcfg-eth0 ifcfg-eth1
[root@openstack network-scripts]# vim ifcfg-eth1
# Generated by dracut initrd
DEVICE="eth1"
ONBOOT="yes"
IPV6INIT="no"
IPV4_FAILURE_FATAL="no"
NM_CONTROLLED="no"
```

```
TYPE="Ethernet"
BOOTPROTO="static"
IPADDR="192.168.2.1"
PREFIX=24
GATEWAY=192.168.1.254
[root@openstack network-scripts]# systemctl restart network
```

2) 给 nova.tedu.cn 主机添加 eth1 网卡

```
[root@room9pc01 networks]# virsh -c qemu:///system attach-interface nova bridge
private2 --model virtio
Interface attached successfully //添加成功
[root@nova ~]# cd /etc/sysconfig/network-scripts
[root@nova network-scripts]# cp ifcfg-eth0 ifcfg-eth1
[root@nova network-scripts]# vim ifcfg-eth1
# Generated by dracut initrd
DEVICE="eth1"
ONBOOT="yes"
IPV6INIT="no"
IPV4_FAILURE_FATAL="no"
NM_CONTROLLED="no"
TYPE="Ethernet"
BOOTPROTO="static"
IPADDR="192.168.2.2"
PREFIX=24
GATEWAY=192.168.1.254
[root@openstack network-scripts]# systemctl restart network
```

3) 配置卷组 (openstack 主机上面操作)

```
[root@room9pc01 images]# qemu-img create -f qcow2 disk.img 50G
Formatting 'disk.img', fmt=qcow2 size=53687091200 encryption=off cluster_size=65536
lazy_refcounts=off
[root@room9pc01 networks]# virsh -c qemu:///system attach-disk openstack \
/var/lib/libvirt/images/disk.img vdb --subdriver qcow2 --sourcetype file
Disk attached successfully //添加成功
[root@openstack ~]# yum install lvm2
[root@openstack ~]# pvcreate /dev/vdb
[root@openstack ~]# vgcreate cinder-volumes /dev/vdb
```

4) 安装 openstack 的依赖包 (openstack.tedu.cn 和 nova.tedu.cn 主机上面操作)

```
[root@openstack ~]# yum install -y qemu-kvm libvirt-client libvirt-daemon
libvirt-daemon-driver-qemu python-setuptools
[root@nova ~]# yum install -y qemu-kvm libvirt-client libvirt-daemon
libvirt-daemon-driver-qemu python-setuptools
```

5. 案例 5 : 部署 Openstack :

• 问题

本案例要求通过 packstack 完成以下配置 :

- 通过 packstack 部署 Openstack
- 根据相关日志文件进行排错

• 步骤

实现此案例需要按照如下步骤进行。

步骤一：安装 packstack

```
[root@openstack ~]# yum install -y openstack-packstack
[root@openstack ~]# packstack --gen-answer-file answer.ini
//answer.ini 与 answer.txt 是一样的，只是用 vim 打开 answer.ini 文件有颜色
Packstack changed given value to required value /root/.ssh/id_rsa.pub
[root@openstack ~]# vim answer.ini
 11 CONFIG_DEFAULT_PASSWORD=redhat //密码
 42 CONFIG_SWIFT_INSTALL=n
 75 CONFIG_NTP_SERVERS=192.168.1.3 //时间服务器的地址
554 CONFIG_CINDER_VOLUMES_CREATE=n //创建卷,已经手动创建过了
840 CONFIG_NEUTRON_ML2_TYPE_DRIVERS=flat,vxlan //驱动类型
876 CONFIG_NEUTRON_ML2_VXLAN_GROUP=239.1.1.5
//设置组播地址,最后一个随意不能为 0 和 255,其他固定
910 CONFIG_NEUTRON_OVS_BRIDGE_MAPPINGS=physnet1:br-ex //物理网桥的名称
921 CONFIG_NEUTRON_OVS_BRIDGE_IFACES=br-ex:eth0
//br-ex 桥的名称与 eth0 连接,管理 eth0,网桥与哪个物理网卡连接
936 CONFIG_NEUTRON_OVS_TUNNEL_IF=eth1
1179 CONFIG_PROVISION_DEMO=n //DEMO 是否测试
[root@openstack ~]# packstack --answer-file=answer.ini
**** Installation completed successfully **** //出现这个为成功
```

步骤二：安装 openstack 可能会出现的错误以及排错方法

1) ntp 时间不同步，如图-2 所示：

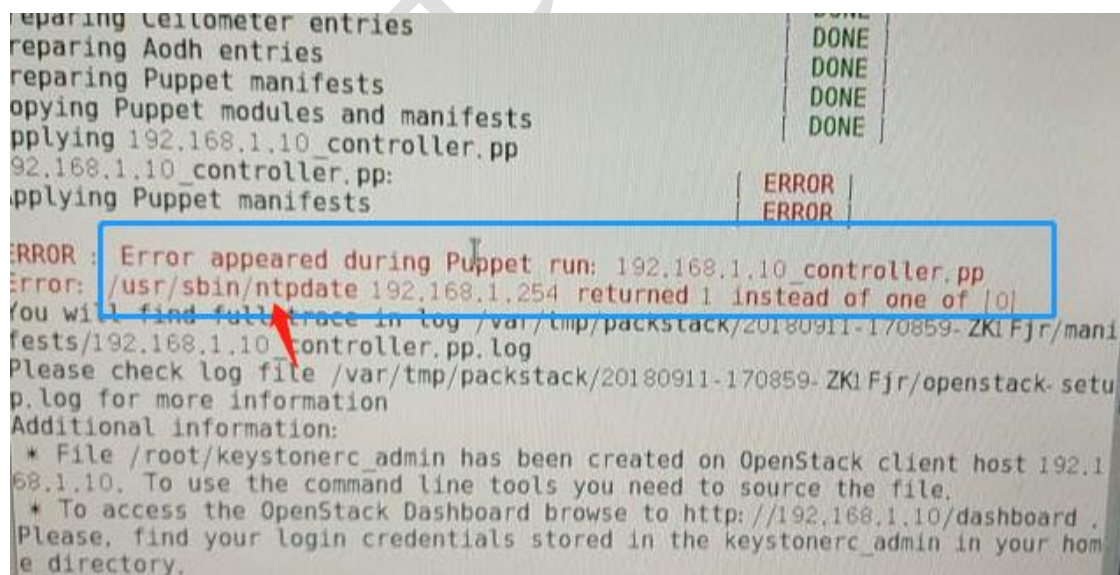


图-2

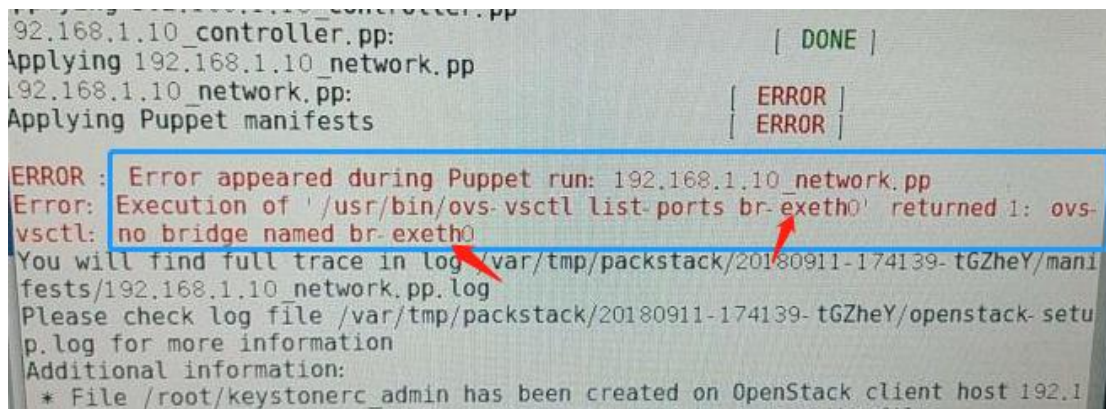
解决办法：查看 ntp 时间服务器，是否出现*号，若没有，查看配置文件，配置 ntp 服务器步骤在案例 3，可以参考

```
[root@room9pc01 ~]# chronyc sources -v //出现*号代表 NTP 时间可用
^* 120.25.115.20 2 6 17 62 -753us[-7003us] +/- 24ms
```



```
[root@openstack ~]# chronyc sources -v
^* 192.168.1.3 3 9 377 504 +50us[ -20us] +/- 24ms
[root@nova ~]# chronyc sources -v
^* 192.168.1.3 3 9 377 159 -202us[ -226us] +/- 24ms
```

2) 网桥名称写错，如图-3 所示：



```
192.168.1.10_controller.pp: [ DONE ]
Applying 192.168.1.10_network.pp
192.168.1.10_network.pp: [ ERROR ]
Applying Puppet manifests [ ERROR ]

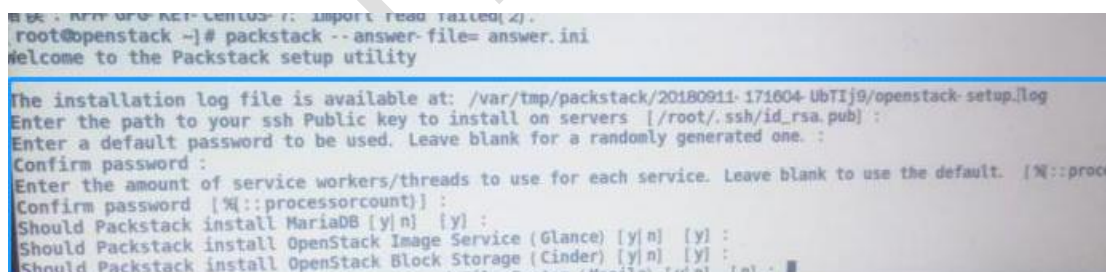
ERROR : Error appeared during Puppet run: 192.168.1.10_network.pp
Error: Execution of \'/usr/bin/ovs-vsctl list ports br-exeth0\' returned 1: ovs-
vsctl: no bridge named br-exeth0
You will find full trace in log /var/tmp/packstack/20180911-174139-tGZheY/mani
fests/192.168.1.10_network.pp.log
Please check log file /var/tmp/packstack/20180911-174139-tGZheY/openstack-setu
p.log for more information
Additional information:
* File /root/keystonerc_admin has been created on OpenStack client host 192.1
```

图-3

解决办法：检查配置文件

```
[root@openstack ~]# vim answer.ini
...
921 CONFIG_NEUTRON_OVS_BRIDGE_IFACES=br-ex:eth0
//br-ex 桥的名称与 eth0 连接，管理 eth0, 网桥与哪个物理网卡连接
...
```

3) 若/root/.ssh/id_rsa.pub，提示 password，同样是配置文件没有写对，如图-4 所示：



```
root@openstack ~]# packstack --answer-file= answer.ini
Welcome to the Packstack setup utility

The installation log file is available at: /var/tmp/packstack/20180911-171604-UbTij9/openstack-setup.log
Enter the path to your ssh Public key to install on servers [/root/.ssh/id_rsa.pub] :
Enter a default password to be used. Leave blank for a randomly generated one. :
Confirm password :
Enter the amount of service workers/threads to use for each service. Leave blank to use the default. [%::proc
Confirm password [%::processorcount]] :
Should Packstack install MariaDB [y/n] [y] :
Should Packstack install OpenStack Image Service (Glance) [y/n] [y] :
Should Packstack install OpenStack Block Storage (Cinder) [y/n] [y] :
Should Packstack install OpenStack File Storage (Manila) [y/n] [n] :
```

图-4

4) yum 源没有配置正确，如图-5 所示：

```

Preparing Horizon entries [ DONE ]
Preparing Gnocchi entries [ DONE ]
Preparing MongoDB entries [ DONE ]
Preparing Redis entries [ DONE ]
Preparing Ceilometer entries [ DONE ]
Preparing Aodh entries [ DONE ]
Preparing Puppet manifests [ DONE ]
Copying Puppet modules and manifests [ DONE ]
Applying 192.168.1.10_controller.pp [ ERROR ]
Applying Puppet manifests [ ERROR ]

ERROR : Error appeared during Puppet run: 192.168.1.10_controller.pp
Error: Execution of '/usr/bin/yum -d 0 -e 0 -y install openstack-dashboard' returned 1: Error downloading packages:
You will find full trace in log /var/tmp/packstack/20180911-170807-zoYMSA/manifests/192.168.1.10_controller.pp.log
Please check log file /var/tmp/packstack/20180911-170807-zoYMSA/openstack-setup.log for more information
Additional information:
* File /root/keystone_admin has been created on OpenStack client host 192.168.1.10. To use the command line tools you
need to source the file.
* To access the OpenStack Dashboard browse to http://192.168.1.10/dashboard .
Please, find your login credentials stored in the keystone_admin in your home directory.
[root@openstack ~]# vim /etc/chrony.conf

```

图-5

解决办法：检查 yum 是否为 10731 个软件包，查看是否是 yum 源没有配置正确，之后安装 openstack-dashboard

备注：除了系统源 gpgcheck=1 之外，其他都是 gpgcheck=0

5) 出现 Cannot allocate memory,如图-6 所示：

```

Preparing Neutron Metering Agent entries [ DONE ]
Checking if NetworkManager is enabled and running [ DONE ]
Preparing OpenStack Client entries [ DONE ]
Preparing Horizon entries [ DONE ]
Preparing Gnocchi entries [ DONE ]
Preparing MongoDB entries [ DONE ]
Preparing Redis entries [ DONE ]
Preparing Ceilometer entries [ DONE ]
Preparing Aodh entries [ DONE ]
Preparing Puppet manifests [ DONE ]
Copying Puppet modules and manifests [ DONE ]
Applying 192.168.1.10_controller.pp [ ERROR ]
Applying Puppet manifests [ ERROR ]

ERROR : Error appeared during Puppet run: 192.168.1.10_controller.pp
Error: Could not prefetch keystone_service provider 'openstack': Cannot allocate memory - fork(2
You will find full trace in log /var/tmp/packstack/20180912-162818-Wq9yRe/manifests/192.168.1.10
Please check log file /var/tmp/packstack/20180912-162818-Wq9yRe/openstack-setup.log for more info
Additional information:
* File /root/keystone_admin has been created on OpenStack client host 192.168.1.10. To use the
you need to source the file.
* To access the OpenStack Dashboard browse to http://192.168.1.10/dashboard .
Please, find your login credentials stored in the keystone_admin in your home directory.
[root@openstack ~]# free -mh\
>
Mem:      total      used      free      shared  buff/cache  available
Swap:      0B          0B          0B          8.5M       562M        1.0G

```

图-6

解决办法：

内存不足，重新启动主机

6. 案例 6：网络管理

• 问题

本案例要求运用 OVS 完成以下配置：

- 查看外部 OVS 网桥及其端口
- 验证 OVS 配置

• 步骤

实现此案例需要按照如下步骤进行。

步骤一：查看外部 OVS 网桥

1) 查看 br-ex 网桥配置 (br-ex 为 OVS 网桥设备)

```
[root@openstack ~]# cat /etc/sysconfig/network-scripts/ifcfg-br-ex
ONBOOT="yes"
NM_CONTROLLED="no"
IPADDR="192.168.1.1"
PREFIX=24
GATEWAY=192.168.1.254
DEVICE=br-ex
NAME=br-ex
DEVICETYPE=ovs
OVSBOOTPROTO="static"
TYPE=OVSBridge
```

2) 查看 eth0 网卡配置 (该网卡为 OVS 网桥的接口)

```
[root@nova ~]# cat /etc/sysconfig/network-scripts/ifcfg-eth0
DEVICE=eth0
NAME=eth0
DEVICETYPE=ovs
TYPE=OVSPort
OVS_BRIDGE=br-ex
ONBOOT=yes
BOOTPROTO=none
```

3) 验证 OVS 配置

```
[root@nova ~]# ovs-vsctl show
Bridge br-ex
  Controller "tcp:127.0.0.1:6633"
    is_connected: true
  fail_mode: secure
  Port br-ex
    Interface br-ex
      type: internal
  Port phy-br-ex
    Interface phy-br-ex
      type: patch
      options: {peer=int-br-ex}
  Port "eth0"
    Interface "eth0"
  ovs_version: "2.5.0"
```

7. 案例 7：管理项目

• 问题

本案例要求通过 Horizon 完成以下操作：

- 创建名为 myproject 的项目
- 查看项目信息
- 更新 vcpu 配额为 30
- 删除 myproject
-

• 步骤

实现此案例需要按照如下步骤进行。

步骤一：浏览器访问 openstack

1) 浏览器访问

```
[root@openstack conf.d]# firefox 192.168.1.1 //访问失败
```

2) 需要改配置文件并重新加载

```
[root@openstack ~]# cd /etc/httpd/conf.d/
[root@openstack conf.d]# vi 15-horizon_vhost.conf
35  WSGIProcessGroup apache
36  WSGIApplicationGroup %{GLOBAL} //添加这一行
[root@openstack conf.d]# apachectl graceful //重新载入配置文件
```

3) 浏览器访问，出现页面，如图-6 所示：

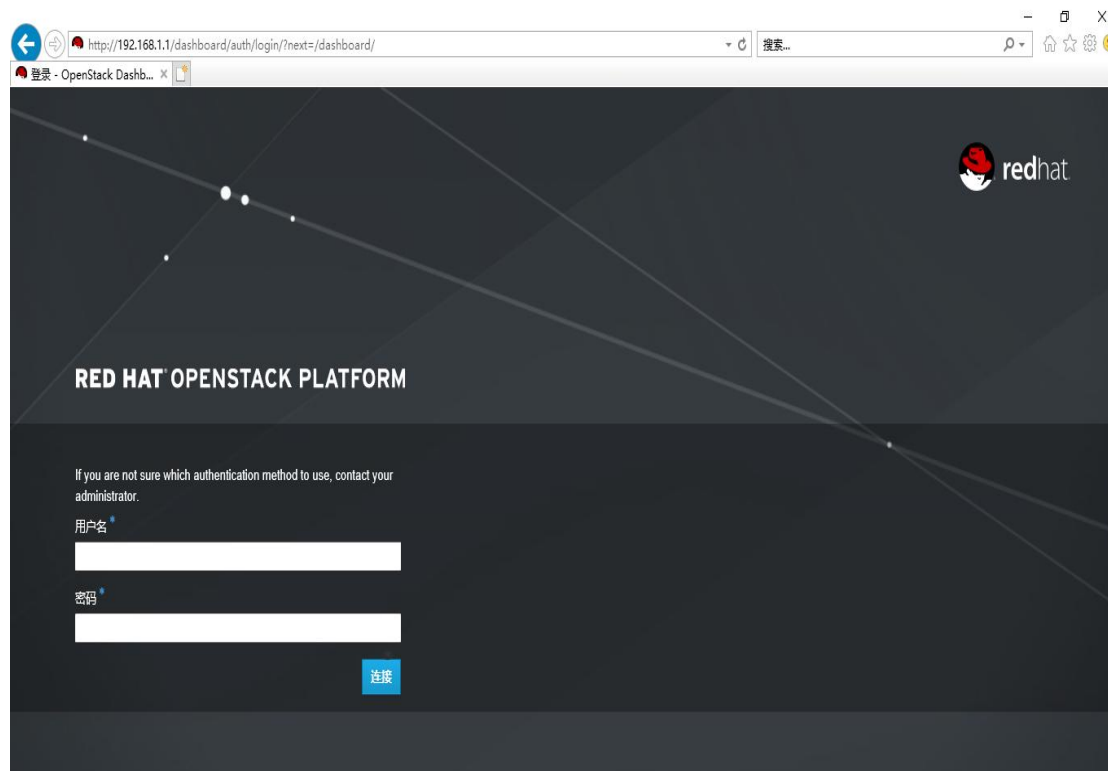


图-6

3) 查看默认用户名和密码

```
[root@openstack conf.d]# cd
[root@openstack ~]# ls
answer.ini  keystone_admin  //keystone_admin 生成的文件，里面有用户名和密码
[root@openstack ~]# cat keystone_admin
unset OS_SERVICE_TOKEN
export OS_USERNAME=admin //用户名
export OS_PASSWORD=1bb4c987345c45ba //密码
export OS_AUTH_URL=http://192.168.1.1:5000/v2.0
export PS1='[\u@\h \W(keystone_admin)]\$ '

export OS_TENANT_NAME=admin
export OS_REGION_NAME=RegionOne
```

4) 在火狐浏览器中输入用户名和密码，登录后页面如图-7 所示：

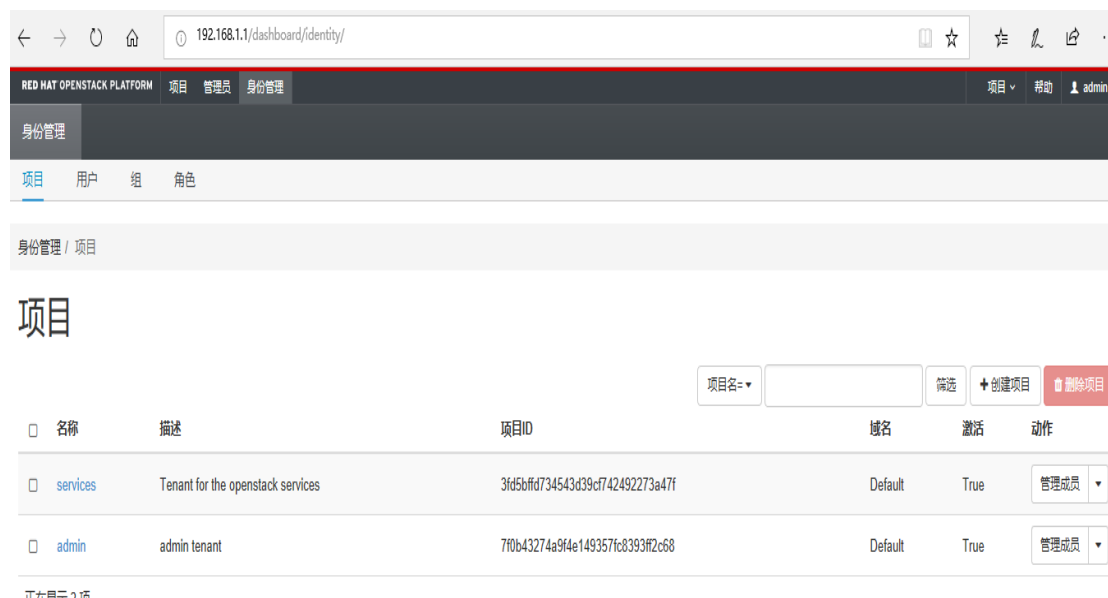


图-7

4) 创建名为 myproject 的项目

```
[root@openstack ~]# source ~/keystonerc_admin //初始化环境变量
[root@openstack ~(keystone_admin)]# openstack project create myproject
+-----+
| Field      | Value                                     |
+-----+
| description | None                                     |
| enabled     | True                                    |
| id          | f73949e2701346328faf5c1272414cd0       |
| name        | myproject                               |
+-----+
```

5) 查看项目信息

```
[root@openstack ~(keystone_admin)]# openstack project list
+-----+
| ID                                     | Name      |
+-----+
| 3fd5bffd734543d39cf742492273a47f     | services  |
| 7f0b43274a9f4e149357fc8393ff2c68     | admin     |
| f73949e2701346328faf5c1272414cd0     | myproject |
+-----+
```

6) 更新 vcpu 配额为 30

```
[root@openstack ~(keystone_admin)]# nova quota-update --cores 30 myproject
```

7) 删除 myproject

```
[root@openstack ~(keystone_admin)]# openstack project delete myproject
```