

## 实验 RDO 安装 OpenStack

OpenStack 主机部署极为繁琐且耗时较长，为快速构建 OpenStack 学习环境可使用 RDO 提供的一键安装方式。

环境: 6CPU、16G RAM, CentOS 7 主机 1 台

软件: 使用 RDO 提供的 packstack 安装 OpenStack。

官方文档: <https://www.rdoproject.org/install/>

OpenStack 测试地址

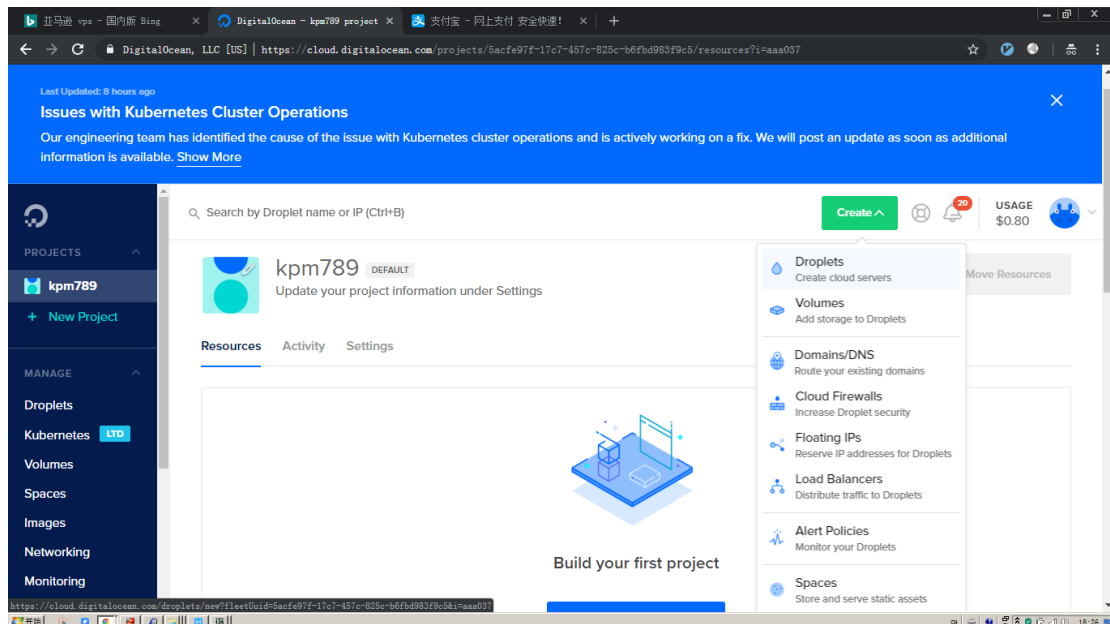
<http://159.89.194.139/dashboard>

user:admin

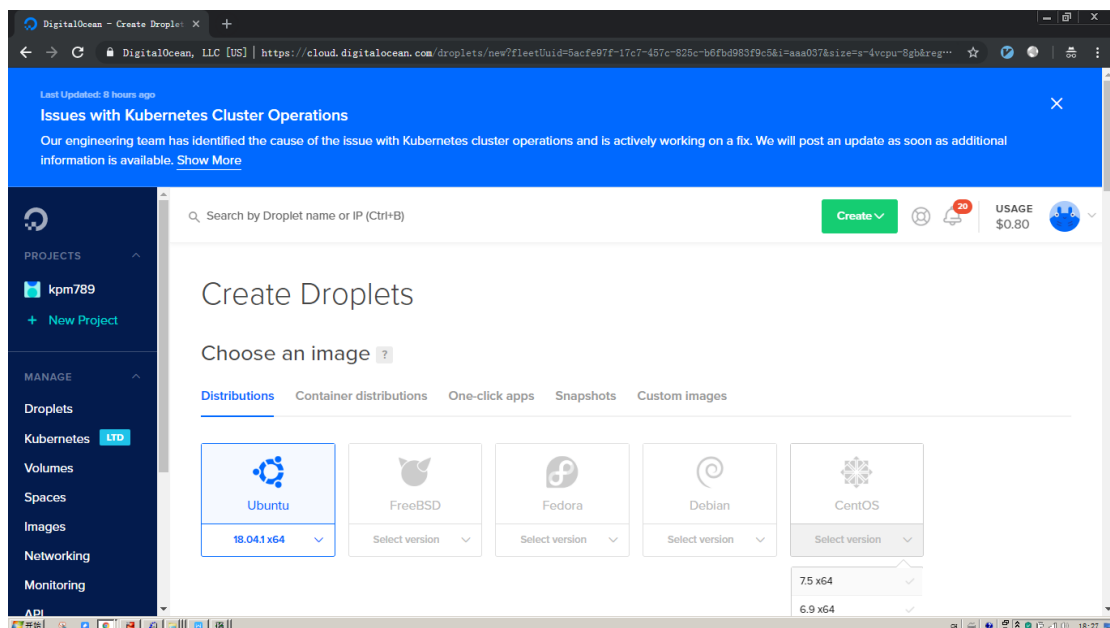
pass:711edcf7abce48de

实验步骤一：准备云主机（6CPU，16G 内存，位于新加坡，价格\$0.119/小时）

## 登录 DigitalOcean 云平台



## 选择云主机操作系统



## 选择云主机规格

The screenshot shows the DigitalOcean 'Create Droplet' interface. The left sidebar contains navigation links for PROJECTS, MANAGE, and ACCOUNT. The main content area displays two categories of droplets: 'Standard Droplets' and 'CPU Optimized Droplets'. Each category has a grid of options with their respective prices and specifications.

| Category               | Option | Price (mo) | Price (hour) | Specs                                           |
|------------------------|--------|------------|--------------|-------------------------------------------------|
| Standard Droplets      | 1      | \$15       | \$0.022      | 1 GB / 3 CPUs, 60 GB SSD disk, 3 TB transfer    |
|                        | 2      | \$20       | \$0.030      | 4 GB / 2 CPUs, 80 GB SSD disk, 4 TB transfer    |
|                        | 3      | \$40       | \$0.060      | 8 GB / 4 CPUs, 160 GB SSD disk, 5 TB transfer   |
|                        | 4      | \$80       | \$0.119      | 16 GB / 6 CPUs, 320 GB SSD disk, 6 TB transfer  |
| CPU Optimized Droplets | 1      | \$40       | \$0.060      | 4 GB / 2 CPUs, 25 GB SSD disk, 4 TB transfer    |
|                        | 2      | \$80       | \$0.119      | 8 GB / 4 CPUs, 50 GB SSD disk, 5 TB transfer    |
|                        | 3      | \$160      | \$0.238      | 16 GB / 8 CPUs, 100 GB SSD disk, 6 TB transfer  |
|                        | 4      | \$320      | \$0.476      | 32 GB / 16 CPUs, 200 GB SSD disk, 7 TB transfer |

Each Droplet adds more free data transfer to your account, starting at 1TB/month and scaling with Droplet usage and size. Additional outbound data transfer is billed at \$0.01/GB. [Read more.](#)

At the bottom, there is a section for 'Add backups'.

## 选择云主机所在地域

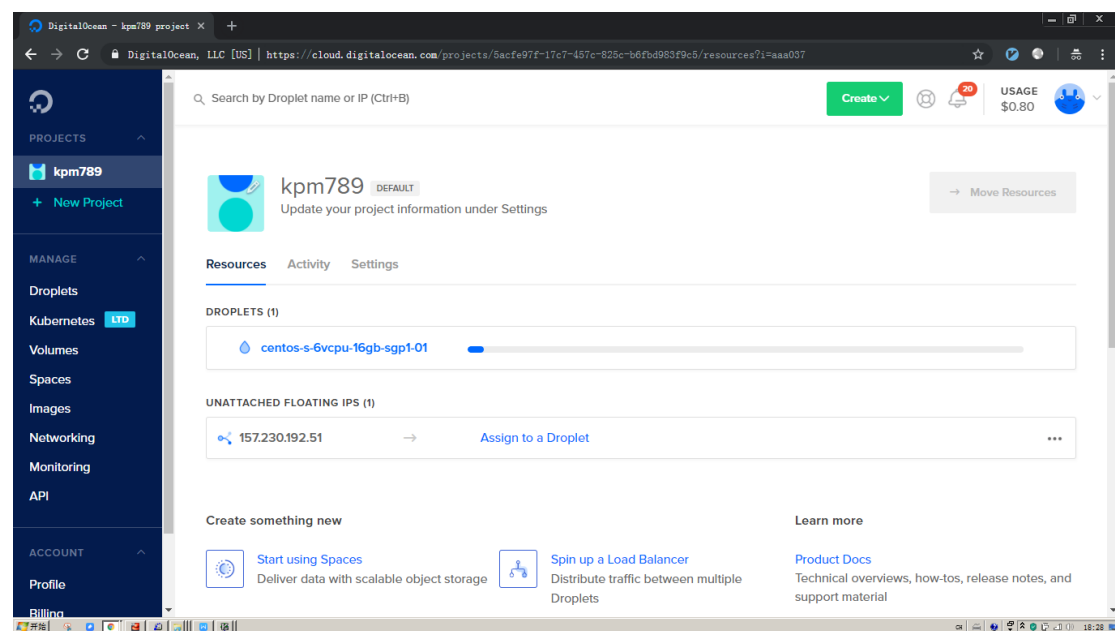
The screenshot shows the DigitalOcean 'Create Droplet' interface, specifically the 'Choose a datacenter region' step. It displays a grid of regions with their respective flags and the number of droplets available in each. Below the grid, there is a section for 'Select additional options' with checkboxes for Private networking, IPv6, User data, and Monitoring.

| Region        | Flag        | Count   |
|---------------|-------------|---------|
| New York      | USA         | 1, 2, 3 |
| San Francisco | USA         | 1, 2    |
| Amsterdam     | Netherlands | 2, 3    |
| Singapore     | Singapore   | 1       |
| London        | UK          | 1       |
| Frankfurt     | Germany     | 1       |
| Toronto       | Canada      | 1       |
| Bangalore     | India       | 1       |

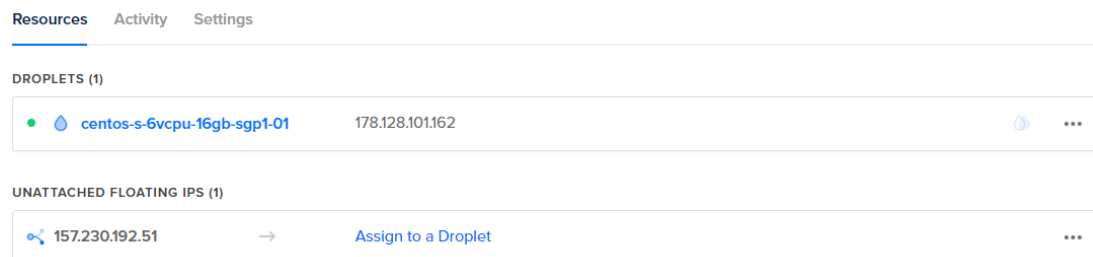
Select additional options ?

- ☐ Private networking
- ☐ IPv6
- ☐ User data
- ☐ Monitoring

## 创建云主机



## 云主机创建成功



DigitalOcean - centos-s-6vcpu-16gb-sgp1-01 X

Search by Droplet name or IP (Ctrl+B) Create USAGE \$0.80

### centos-s-6vcpu-16gb-sgp1-01

in kpm789 / 16 GB Memory / 320 GB Disk / SGP1 - CentOS 7.5 x64 ON

ipv4: 178.128.101.162 ipv6: [Enable now](#) Private IP: [Enable now](#) Floating IP: [Enable now](#) Console: [Console](#)

**Graphs**

- Access
- Power
- Volumes
- Resize
- Networking
- Backups
- Snapshots
- Kernel
- History
- Destroy
- Tags
- Recovery

NEW! Update Droplet to Monitoring [Learn How to Update](#)

Select Period 6 hours

#### CPU Usage

There was a problem loading data for this metric. Please try refreshing the page.

## 实验步骤二：登录云主机

### 通过注册账号收取邮件，查询购买的云主机的 IP、用户名、密码邮件

Your new Droplet is all set to go! You can access it using the following credentials:

Droplet Name: centos-s-6vcpu-16gb-sgpl-01  
IP Address: 178.128.101.162  
Username: root  
Password: b5479bc63ebf8e80ed852ffe47

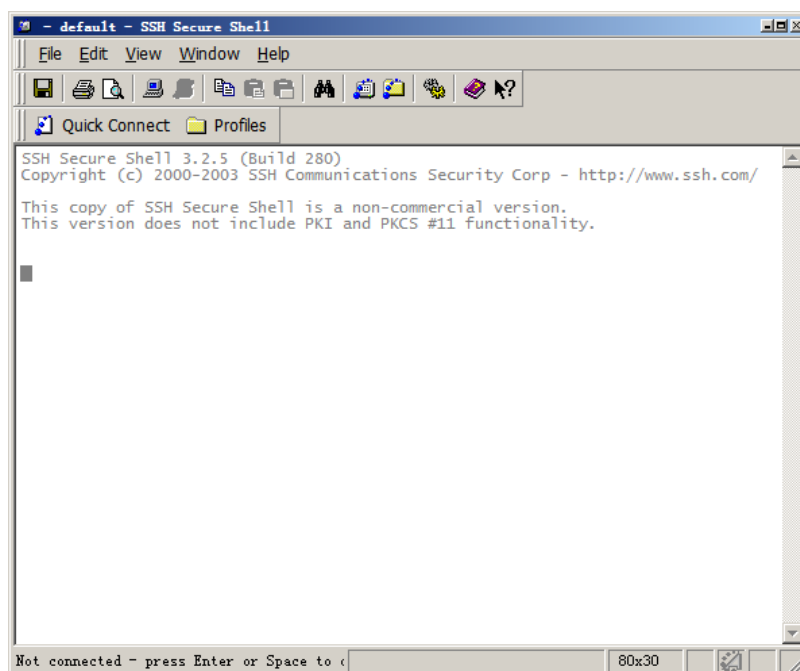
For security reasons, you will be required to change this Droplet's root password when you login. You should choose a strong password that will be easy for you to remember, but hard for a computer to guess. You might try creating an alpha-numerical phrase from a memorable sentence (e.g. "I won my first spelling bee at age 7," might become "Iwm#1sbaa7"). Random strings of common words, such as "Mousetrap Sandwich Hospital Anecdote," tend to work well, too.

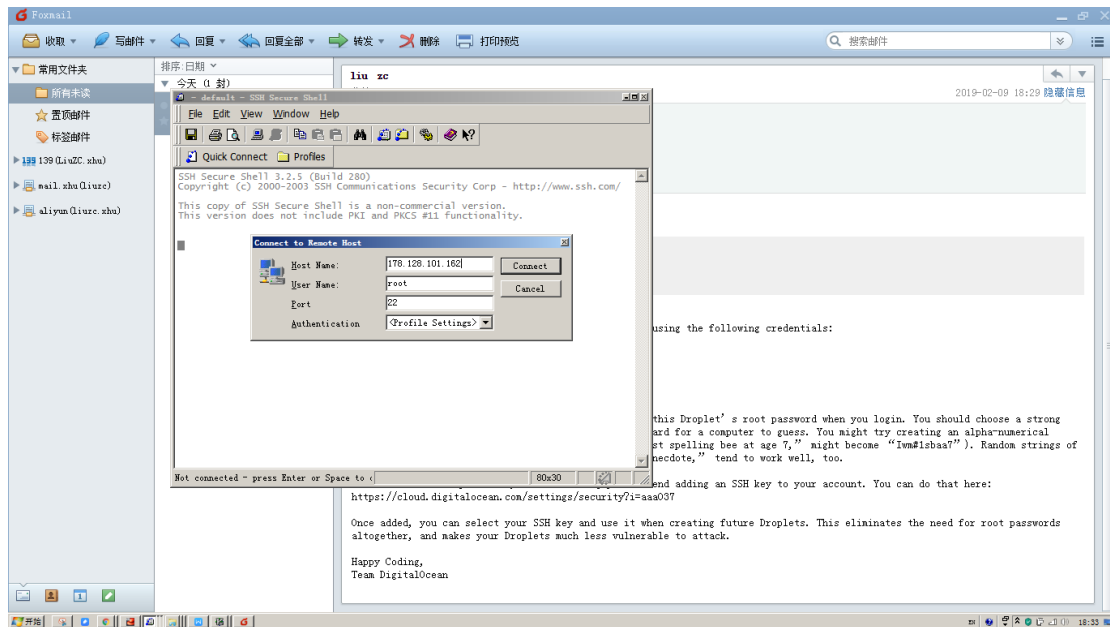
As an added security measure, we also strongly recommend adding an SSH key to your account. You can do that here:  
<https://cloud.digitalocean.com/settings/security?i=aaa037>

Once added, you can select your SSH key and use it when creating future Droplets. This eliminates the need for root passwords altogether, and makes your Droplets much less vulnerable to attack.

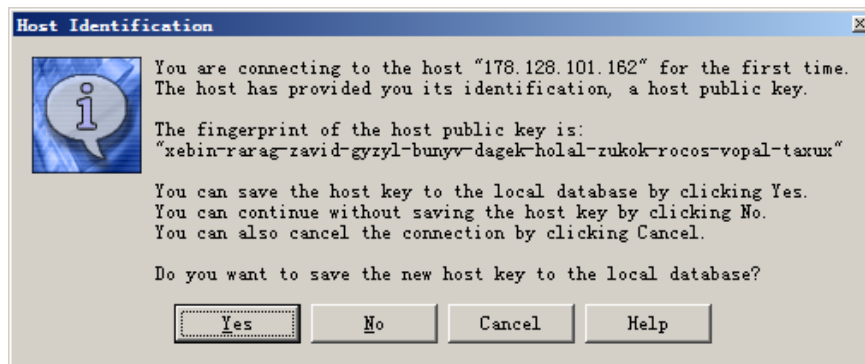
Happy Coding,  
Team DigitalOcean

### 使用 SSHCLIENT 远程操作 Linux 系统





## 选择登录协议



## 输入密码



178.128.101.162 - default - SSH Secure Shell

File Edit View Window Help

Quick Connect Profiles

SSH Secure Shell 3.2.5 (Build 280)  
Copyright (c) 2000-2003 SSH Communications Security Corp - <http://www.ssh.com/>

This copy of SSH Secure Shell is a non-commercial version.  
This version does not include PKI and PKCS #11 functionality.

You are required to change your password immediately (root enforced)  
Last failed login: Sat Feb 9 10:32:16 UTC 2019 from 58.242.83.27 on ssh:notty  
There were 9 failed login attempts since the last successful login.  
Changing password for root.  
(current) UNIX password:  
New password:  
Retype new password:

```
[root@centos-s-6vcpu-16gb-sgp1-01 ~]# w
10:32:40 up 5 min, 1 user, load average: 0.00, 0.01, 0.01
USER      TTY      FROM            LOGIN@   IDLE   JCPU   PCPU   WHAT
root      pts/0    117.174.31.8    10:32    0.00s  0.07s  0.02s  w
[root@centos-s-6vcpu-16gb-sgp1-01 ~]#
```

Connected to 178.128.101.162

SSH2 - aes128-cbc - hmac-sha1 - 80x30



## 实验步骤三：安装 OpenStack

```
#systemctl disable NetworkManager
#systemctl stop NetworkManager
#chkconfig network on
#service network restart
```

```
#dd if=/dev/zero of=/home/swapfile bs=1M count=4096
#/usr/sbin/mkswap /home/swapfile
#/usr/sbin/swapon /home/swapfile
```

Linux 关闭防火墙、SELinux

```
[root@centos-s-6vcpu-16gb-sgpl-01 ~]# systemctl restart network
[root@centos-s-6vcpu-16gb-sgpl-01 ~]# systemctl stop firewalld
[root@centos-s-6vcpu-16gb-sgpl-01 ~]# systemctl disable firewalld
[root@centos-s-6vcpu-16gb-sgpl-01 ~]# setenforce 0
[root@centos-s-6vcpu-16gb-sgpl-01 ~]# sed -i 's/=enforcing/=disabled/'
/etc/selinux/config
```

CentOS 安装 OpenStack 命令

```
yum update -y (更新系统)
yum install -y centos-release-openstack-rocky (安装 rocky 源)
yum update -y (更新源)
yum install -y openstack-packstack (安装 packstack 软件)
packstack --allinone (将 openstack 部署到一台主机)
```

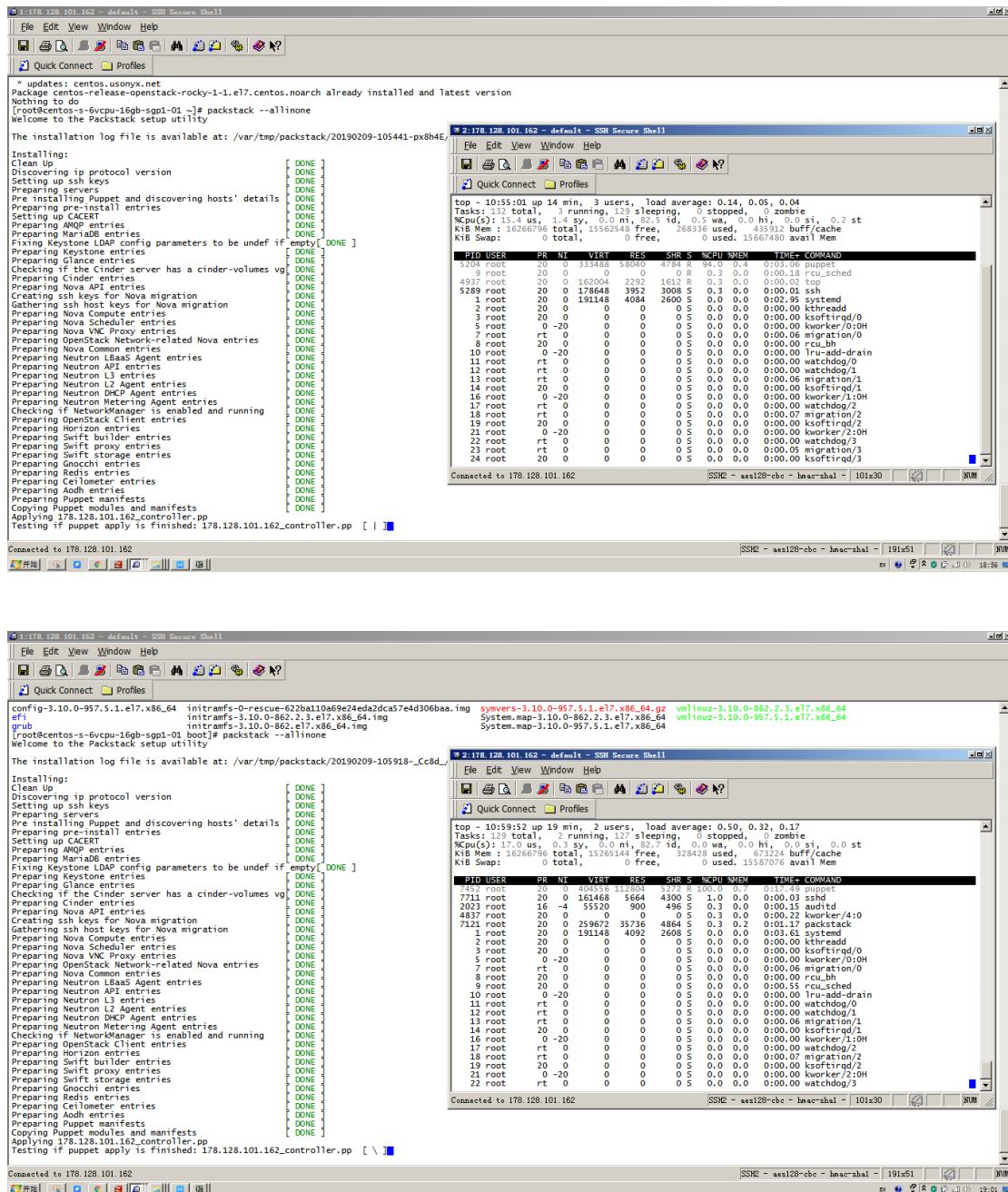
```
178.128.101.162 - default - SSH Secure Shell
File Edit View Window Help
Quick Connect Profiles

Installed size: 24 k
Downloading packages:
(1/3): centos-release-ceph-luminous-1.1-2.el7.centos.noarch.rpm | 4.4 kB 00:00:00
(2/3): centos-release-openstack-rocky-1.1.el7.centos.noarch.rpm | 5.2 kB 00:00:00
(3/3): centos-release-storage-common-2-2.el7.centos.noarch.rpm | 5.1 kB 00:00:00
(4/3): centos-release-virt-common-1.1.el7.centos.noarch.rpm | 4.5 kB 00:00:00
(5/3): centos-release-qemu-ev-1.0-3.el7.centos.noarch.rpm | 11 kB 00:00:00
-----
Total: 136 kB/s | 30 kB 00:00:00
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
Installing : centos-release-storage-common-2-2.el7.centos.noarch
Installing : centos-release-ceph-luminous-1.1-2.el7.centos.noarch
Installing : centos-release-virt-common-1.1.el7.centos.noarch
Installing : centos-release-qemu-ev-1.0-3.el7.centos.noarch
Installing : centos-release-openstack-rocky-1.1.el7.centos.noarch
Verifying : centos-release-ceph-luminous-1.1-2.el7.centos.noarch
Verifying : centos-release-openstack-rocky-1.1.el7.centos.noarch
Verifying : centos-release-qemu-ev-1.0-3.el7.centos.noarch
Verifying : centos-release-virt-common-1.1.el7.centos.noarch
Verifying : centos-release-storage-common-2-2.el7.centos.noarch
1/5
2/5
3/5
4/5
5/5
2/5
3/5
4/5
5/5
Installed:
centos-release-openstack-rocky.noarch 0:1-1.el7.centos
Dependency Installed:
centos-release-ceph-luminous.noarch 0:1-1-2.el7.centos centos-release-qemu-ev.noarch 0:1.0-3.el7.centos centos-release-storage-common.noarch 0:2-2.el7.centos
centos-release-virt-common.noarch 0:1-1.el7.centos
Complete!
[root@centos-s-6vcpu-16gb-sgpl-01 ~]#
[root@centos-s-6vcpu-16gb-sgpl-01 ~]#
[root@centos-s-6vcpu-16gb-sgpl-01 ~]# yum update -y
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
* base: centos.usonyx.net
* extras: centos.usonyx.net
* updates: centos.usonyx.net
centos-ceph-luminous | 2.9 kB 00:00:00
centos-openstack-rocky | 2.9 kB 00:00:00
centos-qemu-ev/7/x86_64/primary.db | 142 kB 00:00:01
centos-release-qemu-ev/7/x86_64/primary.db | 58 kB 00:00:01
(1/3): centos-ceph-luminous/7/x86_64/primary.db | 863 kB 00:00:01
(2/3): centos-qemu-ev/7/x86_64/primary.db
(3/3): centos-openstack-rocky/7/x86_64/primary.db
No packages marked for update
[root@centos-s-6vcpu-16gb-sgpl-01 ~]#
[root@centos-s-6vcpu-16gb-sgpl-01 ~]#
[root@centos-s-6vcpu-16gb-sgpl-01 ~]#
[root@centos-s-6vcpu-16gb-sgpl-01 ~]#
Connected to 178.128.101.162 SSH2 - sess128-cbc - hmac-sha1 - 191x51
```

```
178.128.101.162 - default - SSH Secure Shell
File Edit View Window Help
Quick Connect Profiles

Verifying : python2-pillow-4.0.0-2.el7.x86_64 | 70/76
Verifying : puppet-celometer-13.3.1-1.el7.noarch | 71/76
Verifying : libselinux-ruby-2.5-14.1.el7.x86_64 | 72/76
Verifying : puppet-keystone-13.3.1-1.el7.noarch | 73/76
Verifying : l1openstack-packstack-13.0.0-0.1.0rc1.el7.noarch | 74/76
Verifying : puppet-gnocchi-13.3.1-1.el7.noarch | 75/76
Verifying : puppet-mysql-6.0.0-1.204cf4dgit.el7.noarch | 76/76
Installed:
openstack-packstack.noarch 1:13.0.0-0.1.0rc1.el7
Dependency Installed:
augeas-libs.x86_64 0:1.4.0-6.el7_6.1 facter.x86_64 1:2.4.4-4.el7 hiera.noarch 1:1.3.4-5.el7
libgit-libs.x86_64 0:2.0-11.el7 lcms2.x86_64 0:2.6-3.el7 libimagequant.x86_64 0:2.8.2-2.el7
libjpeg-turbo.x86_64 0:1.2.90-6.el7 libselinux-ruby.x86_64 0:2.5-14.1.el7 libtirpc.x86_64 0:0.4.0-3-27.el7_3
libwebp.x86_64 0:0.3.0-7.el7 libxslt.x86_64 0:2.1.2-1.el7 libzstd.x86_64 0:0.4.0-1.el7
pcre2-libs.x86_64 0:10.3.1-3.el7 puppet-archiver.noarch 0:13.3.1-1.el7 puppet-ceilometer.noarch 0:13.3.1-1.el7
puppet-apache.noarch 0:13.2.0-1.56639c1git.el7 puppet-archive.noarch 0:13.3.1-1.el7 puppet-celometer.noarch 0:13.3.1-1.el7
puppet-certmonger.noarch 0:2.3.0-2.e9457cgit.el7 puppet-cinder.noarch 0:13.3.1-1.el7 puppet-concat.noarch 0:4.2.1-1.bb680c1git.el7
puppet-corosync.noarch 0:6.0.2-0.1.2afcfecgit.el7 puppet-cinder.noarch 0:13.3.1-1.el7 puppet-firewall.noarch 0:13.3.1-1.el7
puppet-gnocchi.noarch 0:13.3.1-1.el7 puppet-heat.noarch 0:13.3.1-1.el7 puppet-glance.noarch 0:13.3.1-1.el7
puppet-inifile.noarch 0:13.3.1-1.el7 puppet-ironic.noarch 0:13.3.1-1.el7 puppet-horizon.noarch 0:13.3.1-1.el7
puppet-magnum.noarch 0:13.3.1-1.el7 puppet-ironic.noarch 0:13.3.1-1.el7 puppet-keystone.noarch 0:13.3.1-1.el7
puppet-mysql.noarch 0:6.0.0-1.204cf4dgit.el7 puppet-manila.noarch 0:13.3.1-1.el7 puppet-memcached.noarch 0:13.3.0-1.e517b44git.el7
puppet-nfs.noarch 0:1.0.1-1.2ed2adgit.el7 puppet-neutron.noarch 0:13.3.1-1.el7 puppet-nova.noarch 0:13.3.1-1.el7
puppet-ovs.noarch 0:13.3.1-1.el7 puppet-openstack-extras.noarch 0:13.3.1-1.el7 puppet-openstack-lib.noarch 0:13.3.1-1.el7
puppet-rabbitmq.noarch 0:8.2.3-0.1.1ccddadgit.el7 puppet-ovn.noarch 0:13.3.1-1.el7 puppet-panko.noarch 0:13.3.1-1.el7
puppet-rsync.noarch 0:1.1.0-1.f8532fgit.el7 puppet-redis.noarch 0:3.3.0-1.989403cgit.el7 puppet-remote.noarch 0:10.0.0-1.7420908git.el7
puppet-staging.noarch 0:1.0.4-1.b466d93git.el7 puppet-sahara.noarch 0:13.3.1-1.el7 puppet-ssh.noarch 0:4.0.0-1.ddcacdgit.el7
puppet-sysctl.noarch 0:0.0.12-1.b3587fegit.el7 puppet-stdlib.noarch 0:4.25.1-1.2f85336git.el7 puppet-swift.noarch 0:13.3.1-1.el7
puppet-vmtoolsd.noarch 0:2.3.0-2.1ba9c8git.el7 puppet-tempest.noarch 0:13.3.1-1.el7 puppet-trove.noarch 0:13.3.1-1.el7
python-docutils.noarch 0:0.11.0-3.20130715svn7687.el7 puppet-vswitch.noarch 0:9.3.1-1.el7 puppet-xinetd.noarch 0:3.0.0-1.b95c79cgit.el7
python2-cffi.noarch 0:0.44-1.el7 python-netifaces.x86_64 0:0.10.4-3.el7 python2-pillow.x86_64 0:4.0.0-2.el7
python2-pillow.x86_64 0:4.0.0-2.el7 ruby-augeas.x86_64 0:0.5.0-1.el7 python2-netaddr.noarch 0:0.7.19-5.el7
ruby-libs.x86_64 0:2.0.0.648-34.el7_6 ruby-shadow.x86_64 0:1.4.1-23.el7 rubygem-bigdecimal.x86_64 0:1.2.0-34.el7_6
rubygem-to-console.x86_64 0:0.4.2-34.el7_6 rubygem-json.x86_64 0:1.7.7-34.el7_6 rubygem-psych.x86_64 0:2.0.0-34.el7_6
rubygem-rdoc.noarch 0:4.0.0-34.el7_6 rubygem-rgen.noarch 0:0.6.6-2.el7 rubygens.noarch 0:2.0.14.1-34.el7_6
Complete!
[root@centos-s-6vcpu-16gb-sgpl-01 ~]# packstack --allinone
Welcome to the Packstack setup utility
The installation log file is available at: /var/tmp/packstack/20190209-104116-dJuDa0/openstack-setup.log
Packstack changed given value to required value /root/.ssh/id_rsa.pub
Installing:
Clean Up [ DONE ]
Discovering ip protocol version [ DONE ]
Setting up ssh keys [ DONE ]
Preparing servers [ DONE ]
Connected to 178.128.101.162 SSH2 - sess128-cbc - hmac-sha1 - 191x51
```

等待 30~120 分钟可完成安装（根据网速而定）。



安装过程中可能因为断网等原因报错，需要重新运行命令 **packstack --allinone**。

## 实验步骤四：使用 OpenStack 云平台

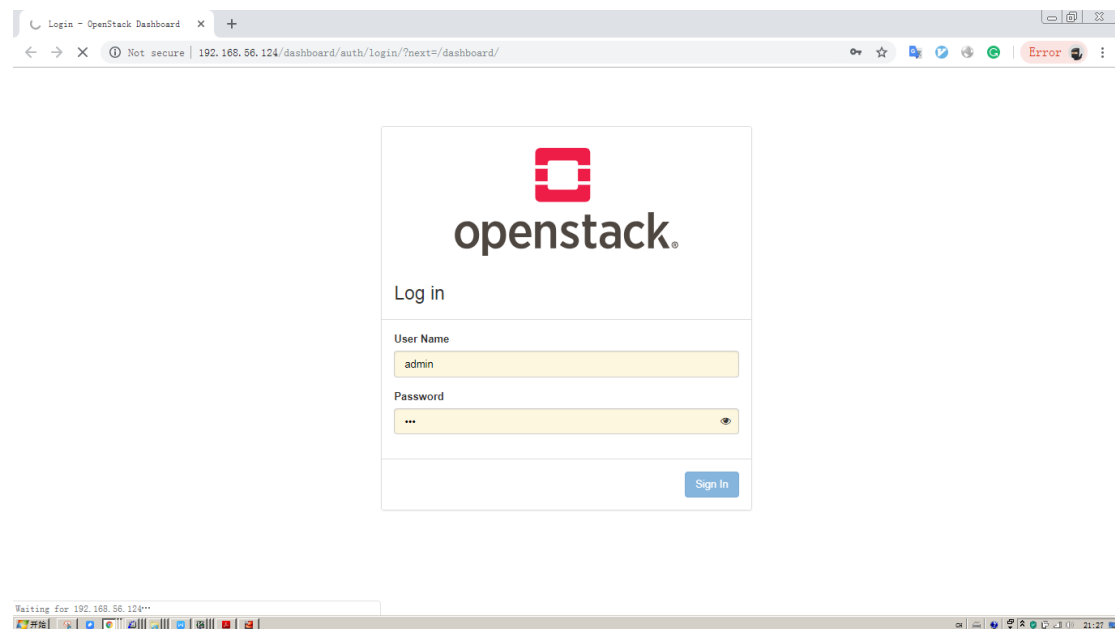
安装完毕，可使用云操作系统 OpenStack。

<http://159.89.194.139/dashboard>

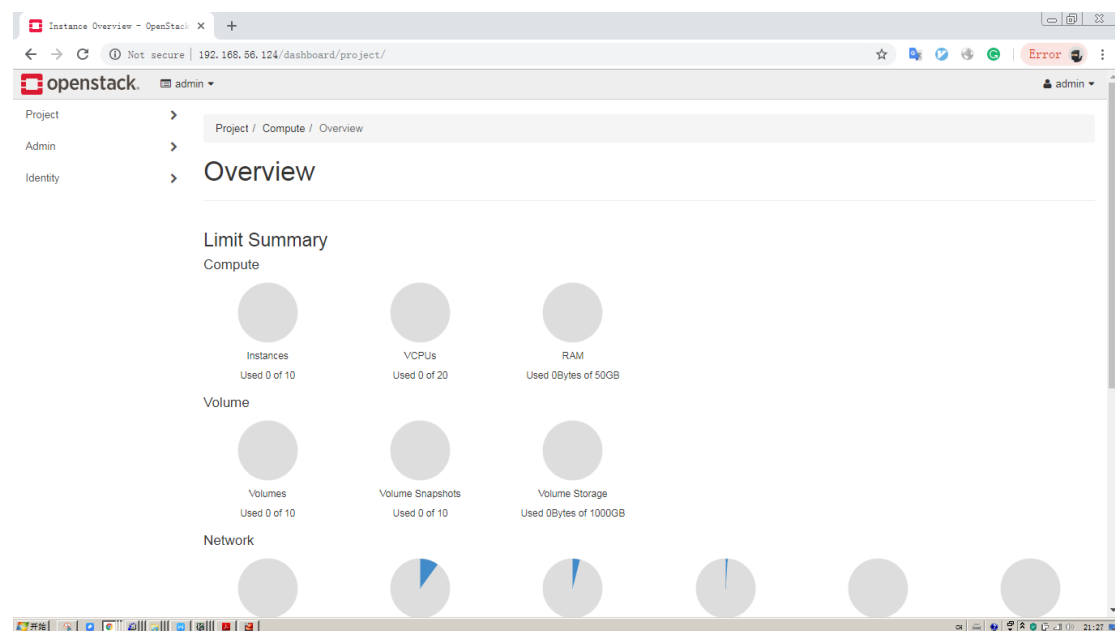
user:admin

pass:711edcf7abce48de

## 登录 OpenStack



## 云平台资源概况



## 云平台租户（Project）菜单

Project

API Access

Compute

Volumes

Network

Object Store

Admin

Identity

## 通过云平台构建虚拟机(Instance)实例

### Instances

Instance ID =

Filter

Launch Instance

Delete Instances

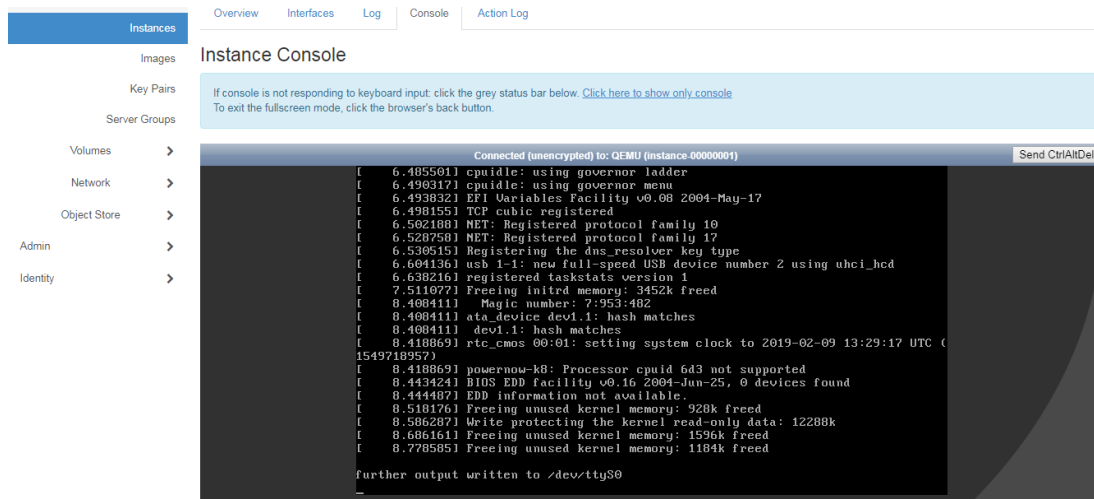
More Actions

Displaying 1 item

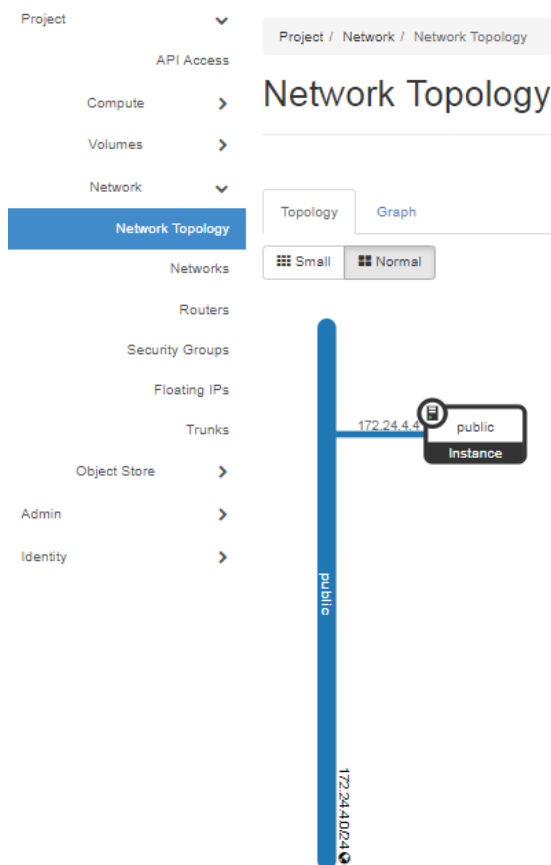
| <input type="checkbox"/> | Instance Name | Image Name | IP Address | Flavor  | Key Pair | Status | Availability Zone | Task       | Power State | Time since created | Actions               |
|--------------------------|---------------|------------|------------|---------|----------|--------|-------------------|------------|-------------|--------------------|-----------------------|
| <input type="checkbox"/> | public        | -          |            | m1.tiny | -        | Build  | nova              | Networking | No State    | 0 minutes          | Associate Floating IP |

Displaying 1 item

## 启动虚拟机实例并使用 VNC 远程登录



## 云平台网络拓扑



## 云平台存储容器构建

openstack

admin

admin

Project

Project / Object Store / Containers

API Access

Compute

Volumes

Network

Object Store

Containers

Admin

Identity

Containers

test1

Object Count: 1

Size: 56.37 MB

Date Created: Feb 9, 2019

Public Access: Disabled

test1

Click here for filters.

Click here for filters.

Displaying 1 item

checkbox

Name

checkbox

chrome.dll

56.37 MB

Download

Displaying 1 item