OpenStack 实验环境部署

1. 标准安装

参考：https://docs.openstack.org/developer/devstack/

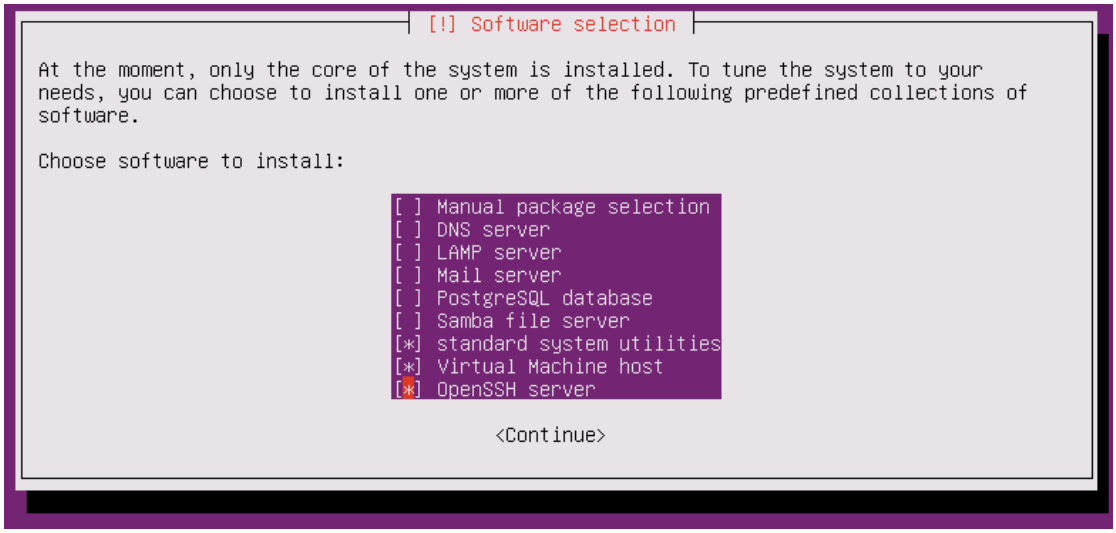
1.1. 安装 Linux ubuntu-16.04.1

使用 ubuntu-16.04.1-server-amd64.iso 来进行安装。

即可以在物理机上来安装，也可以在虚拟化环境中来部署。

如果的虚拟化环境，请启用嵌套虚拟化的选项。

采用最小化安装。由于是 All-in-One 的实现，要增加 **Virtual Machine host** 和 **OpenSSH Server** 组件。



修改主机名称

$ sudo vi /etc/hostname

tomops1

修改 IP 地址

$ sudo vi /etc/network/interfaces

```
# The primary network interface
auto ens160
iface ens160 inet dhcp
```

修改为

```
auto ens160
iface ens160 inet static
address 192.168.1.21
netmask 255.255.255.0
gateway 192.168.1.1
```

修改 DNS 配置

$ sudo vi /etc/resolvconf/resolv.conf.d/base

nameserver 192.168.1.11

建议进行 apt-get update 和 upgrade 操作，一是有新版本的包，二是可以在运行 stack.sh 之前就进行更新以提高效率。

2017/08/08 升级后版本信息。

```
$ uname -a
Linux tomops1 4.4.0-31-generic #50-Ubuntu SMP Wed Jul 13 00:07:12 UTC

$ cat /etc/os-release
NAME="Ubuntu"
VERSION="16.04.3 LTS (Xenial Xerus)"
ID=ubuntu
ID_LIKE=debian
PRETTY_NAME="Ubuntu 16.04.3 LTS"
VERSION_ID="16.04"
HOME_URL="http://www.ubuntu.com/"
SUPPORT_URL="http://help.ubuntu.com/"
BUG_REPORT_URL="http://bugs.launchpad.net/ubuntu/"
VERSION_CODENAME=xenial
UBUNTU_CODENAME=xenial

$ cat /etc/lsb-release
DISTRIB_ID=Ubuntu
DISTRIB_RELEASE=16.04
DISTRIB_CODENAME=xenial
DISTRIB_DESCRIPTION="Ubuntu 16.04.3 LTS"
```

1.2. 添加 Stack 用户

```
$ sudo useradd -s /bin/bash -d /opt/stack -m stack
$ echo "stack ALL=(ALL) NOPASSWD: ALL" | sudo tee /etc/sudoers.d/stack
$ sudo su - stack
```

早期文档还有另外一种做法，是下载脚本后，执行脚本中的一个文件

```
sudo devstack/tools/create-stack-user.sh
sudo mv devstack /opt/stack
sudo chown -R stack:stack /opt/stack/devstack
```

扩展知识

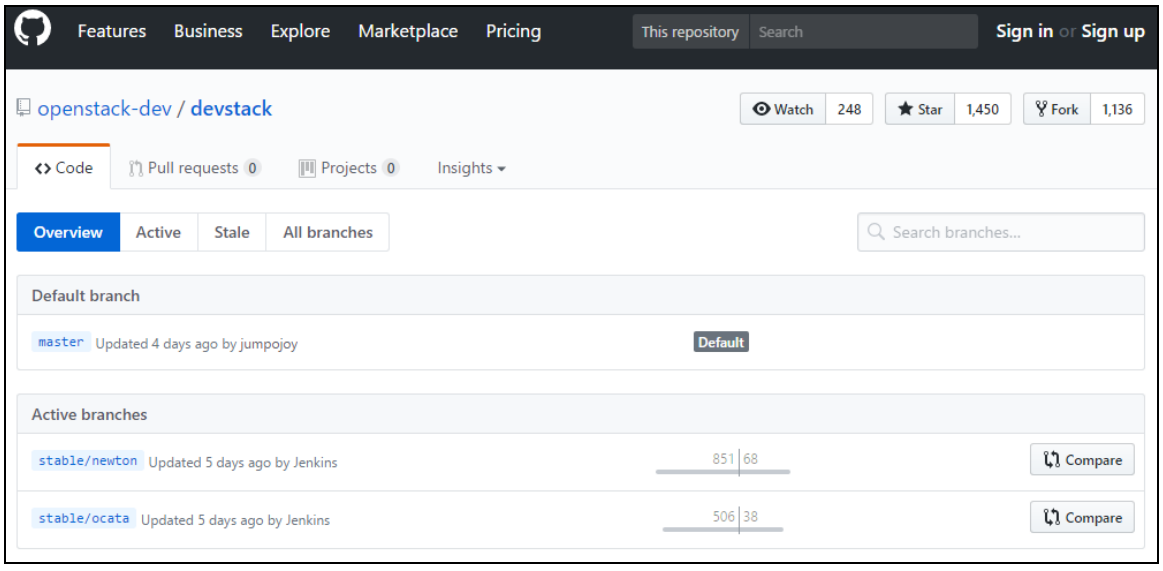
$ cat devstack/tools/create-stack-user.sh

```
#!/usr/bin/env bash

# **create-stack-user.sh**

# Create a user account suitable for running DevStack
# - create a group named $STACK_USER if it does not exist
# - create a user named $STACK_USER if it does not exist
# - home is $DEST
# - configure sudo for $STACK_USER

# ``stack.sh`` was never intended to run as root.  It had a hack to
# do what is now in this script and re-launch itself, but that hack
# was less than perfect and it was time for this nonsense to stop.
# Run this script as root to create the user and configure sudo.

set -o errexit

# Keep track of the DevStack directory
TOP_DIR=$(cd $(dirname "$0")/.. && pwd)

# Import common functions
source $TOP_DIR/functions

# Determine what system we are running on.  This provides ``os_VENDOR``,
# ``os_RELEASE``, ``os_UPDATE``, ``os_PACKAGE``, ``os_CODENAME``
# and ``DISTRO``
GetDistro

# Needed to get ``ENABLED_SERVICES`` and ``STACK_USER``
source $TOP_DIR/stackrc

# Give the non-root user the ability to run as **root** via ``sudo``
is_package_installed sudo || install_package sudo

[[ -z "$STACK_USER" ]] && die "STACK_USER is not set. Exiting."

if ! getent group $STACK_USER >/dev/null; then
    echo "Creating a group called $STACK_USER"
    groupadd $STACK_USER
fi
```

```
if ! getent passwd $STACK_USER >/dev/null; then
    echo "Creating a user called $STACK_USER"
    useradd -g $STACK_USER -s /bin/bash -d $DEST -m $STACK_USER
fi

echo "Giving stack user passwordless sudo privileges"
# UEC images ``/etc/sudoers`` does not have a ``#includedir``, add one
grep -q "^#includedir.*/etc/sudoers.d" /etc/sudoers ||
    echo "#includedir /etc/sudoers.d" >> /etc/sudoers
( umask 226 && echo "$STACK_USER ALL=(ALL) NOPASSWD:ALL" \
    > /etc/sudoers.d/50_stack_sh )
```

1.3. 下载 DevStack 脚本

https://github.com/openstack-dev/devstack/branches 显示分支的情况。



以 stack 的身份执行以下命令

```
$ pwd
/opt/stack

$ sudo apt-get install git -y

$ time git clone https://git.openstack.org/openstack-dev/devstack
-b stable/ocata
```

```
Cloning into 'devstack'...
remote: Counting objects: 38821, done.
remote: Compressing objects: 100% (18965/18965), done.
remote: Total 38821 (delta 27629), reused 30034 (delta 19298)
Receiving objects: 100% (38821/38821), 8.01 MiB | 326.00 KiB/s, done.
Resolving deltas: 100% (27629/27629), done.
Checking connectivity... done.

real    0m33.874s
user    0m1.760s
sys     0m0.708s
```

扩展知识：git-clone 的参数

```
git-clone  Clone a repository into a new directory.
--branch <name>, -b <name>
Instead of pointing the newly created HEAD to the branch pointed to
by the cloned repository's HEAD, point to <name> branch instead. In
a non-bare repository, this is the branch that will be checked out.
--branch can also take tags and detaches the HEAD at that commit in
the resulting repository.
```

建议备份一下下载的 DevStack 的脚本

```
$ tar zcf devstack20170531.tar.gz devstack
$ ll
total 9468
drwxr-xr-x  5 tom  tom    4096 May 31 12:07 ./
drwxr-xr-x  3 root root   4096 Feb 14 22:00 ../
-rw-------  1 tom  tom     621 May 31 09:52 .bash_history
-rw-r--r--  1 tom  tom     220 Feb 14 22:00 .bash_logout
-rw-r--r--  1 tom  tom    3771 Feb 14 22:00 .bashrc
drwx------  2 tom  tom    4096 Feb 14 22:03 .cache/
drwxrwxr-x 15 tom  tom    4096 May 31 12:06 devstack/
-rw-rw-r--  1 tom  tom 9650999 May 31 12:07 devstack20170531.tar.gz
-rw-r--r--  1 tom  tom     655 Feb 14 22:00 .profile
drwx------  2 tom  tom    4096 May 31 09:45 .ssh/
-rw-r--r--  1 tom  tom       0 May 31 09:40 .sudo_as_admin_successful
-rw-------  1 tom  tom    2647 May 31 09:52 .viminfo
```

1.4. 创建回答文件 local.conf 文件

DeveStack 被设计用来部署和测试 OpenStack 组件，因此有多种可行的配置方式。DevStack 是通过维护 local.conf 文件中的参数来进行控制的。

以 stack 的身份执行以下命令

```
$ id
uid=1001(stack) gid=1001(stack) groups=1001(stack)

$ cd devstack
```

创建一个最简单的配置文件

```
$ vi local.conf
```

添加如下内容：

```
[[local|localrc]]
ADMIN_PASSWORD=secret
DATABASE_PASSWORD=$ADMIN_PASSWORD
RABBIT_PASSWORD=$ADMIN_PASSWORD
SERVICE_PASSWORD=$ADMIN_PASSWORD
```

secret 是初始密码，您可以根据需要设置自己的密码。

Tip： 如果从此文档复制粘贴到配置文件中，要注意 UNIX/Linux 文本文件的行结尾。

1.5. 开始安装 ./stack.sh

以 stack 的身份执行以下命令

```
$ time ./stack.sh
```

经常漫长的等待，最终成功了：

```
=========================
DevStack Component Timing
=========================
Total runtime       19253
```

```
run_process           56
test_with_retry        4
apt-get-update         7
pip_install         1791
restart_apache_server  17
wait_for_service      23
git_timed           15530
apt-get             779
```

```
This is your host IP address: 192.168.1.21
This is your host IPv6 address: ::1
Horizon is now available at http://192.168.1.21/dashboard
Keystone is serving at http://192.168.1.21/identity/
The default users are: admin and demo
The password: secret
2017-02-21 18:54:32.992 | WARNING:
2017-02-21 18:54:32.992 | Using lib/neutron-legacy is deprecated, and
it will be removed in the future
2017-02-21 18:54:32.992 | stack.sh completed in 19253 seconds.
```

我们分析一下时间。

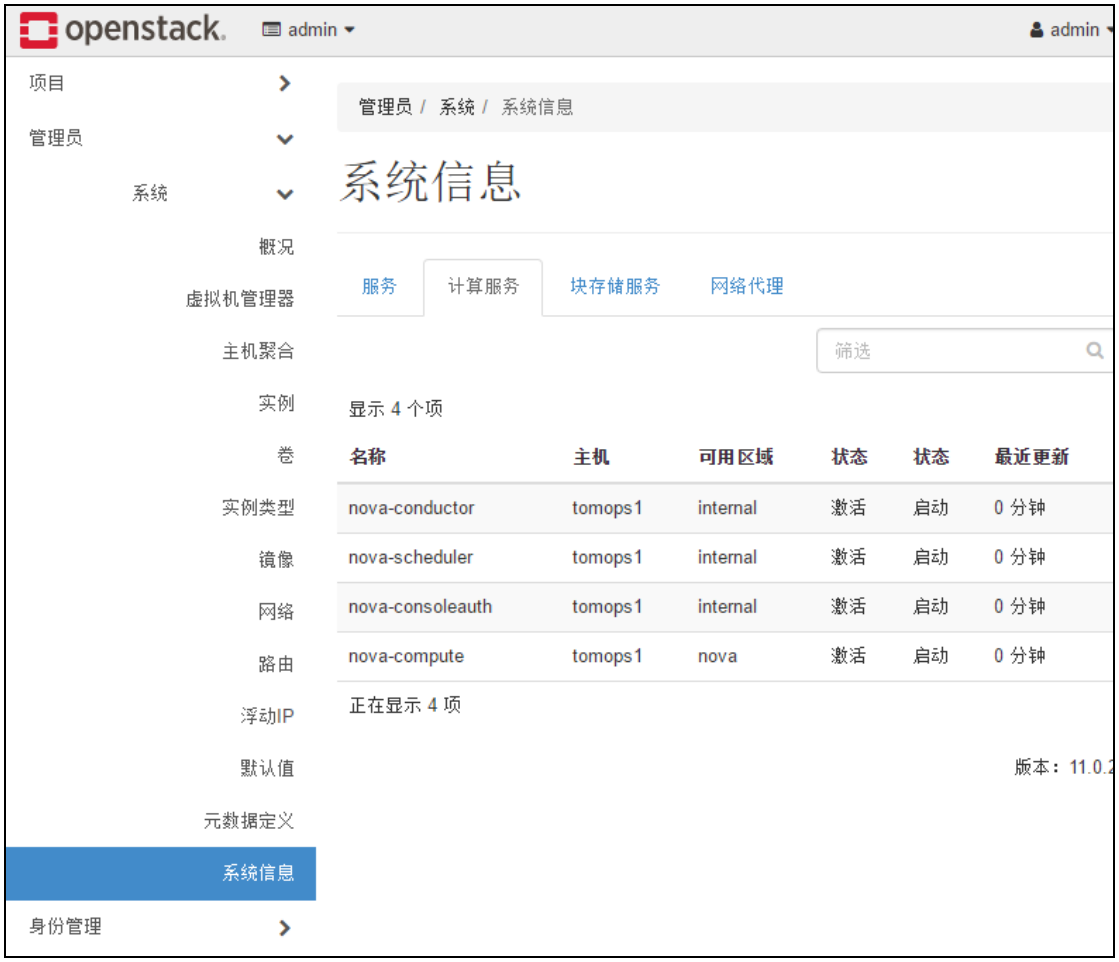
	耗时（秒）	耗时（分）	比例
Total runtime	19253	321	
run_process	56	1	0%
test_with_retry	4	0	0%
apt-get-update	7	0	0%
pip_install	1791	30	9%
restart_apache_server	17	0	0%
wait_for_service	23	0	0%
git_timed	15530	259	81%
apt-get	779	13	4%

如果中间有错误退出，很多情况下是网络的问题。

可以重新执行`./stack.sh`，直到成功。

1.6. 考察安装结果

通过浏览器访问，会自动适应当前语言环境。



查看/etc/passwd 中的新增加的用户账户。

```
stack:x:1001:1001::/opt/stack:/bin/bash
memcache:x:111:117:Memcached,,,:/nonexistent:/bin/false
postgres:x:112:119:PostgreSQL
administrator,,,:/var/lib/postgresql:/bin/bash
epmd:x:113:120::/var/run/epmd:/bin/false
rabbitmq:x:114:121:RabbitMQ messaging
server,,,:/var/lib/rabbitmq:/bin/false
mysql:x:115:122:MySQL Server,,,:/nonexistent:/bin/false
radvd:x:116:65534::/var/run/radvd:/bin/false
libvirt-qemu:x:64055:123:Libvirt
Qemu,,,:/var/lib/libvirt:/bin/false
libvirt-dnsmasq:x:117:124:Libvirt
Dnsmasq,,,:/var/lib/libvirt/dnsmasq:/bin/false
```

2. 提高安装速度的方法

有多次安装不成功，均网速的问题。安装的过程，需要考虑从三类位置下载软件

1、OpenStack
2、Ubuntu
3、Python

第一个，一直没有找到合适稳定的镜像站点。

第二个， Ubuntu 镜像众多，仅仅国内的就有网易、搜狐、阿里以及中科大等多个镜像。但是有点无从下手，不知如何选择；或者就是使用 ping 来查看每个镜像的响应时间再做选择。但是，这种方法有点麻烦。

现在，apt-get 已经支持 mirror 方法，这个方法可以自动根据当前的位置，选择使用一个比较好的镜像。需要做的工作，仅仅是修改一下 /etc/apt/sources.list 。

例如：我的是 16.04，版本为 Xenial ，在这个配置文件的头部添加如下行：

```
$ sudo vi /etc/apt/sources.list
```

在文章头部添加

```
deb mirror://mirrors.ubuntu.com/mirrors.txt xenial main restricted
universe multiverse
deb mirror://mirrors.ubuntu.com/mirrors.txt xenial-updates main
restricted universe multiverse
deb mirror://mirrors.ubuntu.com/mirrors.txt xenial-backports main
restricted universe multiverse
deb mirror://mirrors.ubuntu.com/mirrors.txt xenial-security main
restricted universe multiverse
```

第三个，测试了一下豆瓣 pip 镜像站点速度比较快。那么我们就通过它来进行 Python 组件的安装吧。

```
$ sudo mkdir /root/.pip/
$ sudo vi /root/.pip/pip.conf
```

添加如下内容

```
[global]
index-url = https://pypi.douban.com/simple
```

Ubuntu 16.04 LTS 更新源,亲测好用!

http://blog.csdn.net/u010447234/article/details/53557742

备份初始源

```
$ cd /etc/apt
$ ls
apt.conf.d  preferences.d  sources.list  sources.list~
sources.list.d  trusted.gpg  trusted.gpg.d
$ sudo cp sources.list sources.list.origin
```

修改编辑源

```
$ sudo vi sources.list
```

在头部添加发下内容:

```
deb-src http://archive.ubuntu.com/ubuntu xenial main restricted
#Added by software-properties
deb http://mirrors.aliyun.com/ubuntu/ xenial main restricted
deb-src http://mirrors.aliyun.com/ubuntu/ xenial main restricted
multiverse universe #Added by software-properties
deb http://mirrors.aliyun.com/ubuntu/ xenial-updates main restricted
deb-src http://mirrors.aliyun.com/ubuntu/ xenial-updates main
restricted multiverse universe #Added by software-properties
deb http://mirrors.aliyun.com/ubuntu/ xenial universe
deb http://mirrors.aliyun.com/ubuntu/ xenial-updates universe
deb http://mirrors.aliyun.com/ubuntu/ xenial multiverse
deb http://mirrors.aliyun.com/ubuntu/ xenial-updates multiverse
deb http://mirrors.aliyun.com/ubuntu/ xenial-backports main
restricted universe multiverse
deb-src http://mirrors.aliyun.com/ubuntu/ xenial-backports main
restricted universe multiverse #Added by software-properties
deb http://archive.canonical.com/ubuntu xenial partner
deb-src http://archive.canonical.com/ubuntu xenial partner
deb http://mirrors.aliyun.com/ubuntu/ xenial-security main
restricted
deb-src http://mirrors.aliyun.com/ubuntu/ xenial-security main
restricted multiverse universe #Added by software-properties
deb http://mirrors.aliyun.com/ubuntu/ xenial-security universe
deb http://mirrors.aliyun.com/ubuntu/ xenial-security multiverse
```

更新源

```
$ sudo apt-get update
```

提高的下载速度 get-pip.py

https://bootstrap.pypa.io/get-pip.py

stack.sh 脚本有一个下载 get-pip.py 1.52MB，很慢很慢。

在外部通过迅雷等下载工具下载后，复制到 devstak/file 目录中，可以大大提高速度。

后续的文件会从豆瓣下载。

3. 测试安装

4. 排错

4.1. 解决 screen Cannot open your terminal 问题

故障描述：

```
root@tomops1:~# su - stack

stack@tomops1:~$ screen -ls
There is a screen on:
       19715.stack    (05/31/2017 05:25:36 PM)       (Detached)
1 Socket in /var/run/screen/S-stack.

stack@tomops1:~$ screen -r
Cannot open your terminal '/dev/pts/0' - please check.
```

解决方法：

参考：http://blog.sina.com.cn/s/blog_704836f401010osn.html

```
stack@tomops1:~$ script /dev/null
```

```
Script started, file is /dev/null
```

stack@tomops1:~$ screen –r
成功解决这个问题

5. 参考时间

1、工作日，单位的实验环境，使用加速模式

```
=========================
DevStack Component Timing
=========================
Total runtime        8719

run_process           59
test_with_retry        5
apt-get-update       250
pip_install          938
restart_apache_server  16
wait_for_service       23
git_timed            1643
apt-get              2798
=========================



This is your host IP address: 192.168.1.221
This is your host IPv6 address: ::1
Horizon is now available at http://192.168.1.221/dashboard
Keystone is serving at http://192.168.1.221/identity/
The default users are: admin and demo
The password: admin
2017-05-31 10:14:55.503 | WARNING:
2017-05-31 10:14:55.504 | Using lib/neutron-legacy is deprecated, and
it will be removed in the future
2017-05-31 10:14:55.504 | stack.sh completed in 8719 seconds.

real    145m19.134s
user    21m55.412s
sys     2m18.932s
```

2、标准安装，没有采用加速手段，在家中通过联通的 50M 宽带

```
git_timed       413
apt-get          88
=========================



This is your host IP address: 192.168.1.21
This is your host IPv6 address: ::1
Horizon is now available at http://192.168.1.21/dashboard
Keystone is serving at http://192.168.1.21/identity/
The default users are: admin and demo
The password: admin
Services are running under systemd unit files.
For more information see:
https://docs.openstack.org/developer/devstack/systemd.html
2017-05-30 04:13:05.479 | WARNING:
2017-05-30 04:13:05.479 | Using lib/neutron-legacy is deprecated, and it
will be removed in the future
2017-05-30 04:13:05.479 | stack.sh completed in 2582 seconds.

real    43m2.242s
user    10m0.244s
sys     1m42.376s
```

家中 50M 宽带，采用镜像加速

```
=========================
DevStack Component Timing
=========================
Total runtime        1303

run_process           59
test_with_retry        3
apt-get-update        49
pip_install          180
restart_apache_server  17
wait_for_service       14
apt-get               93
=========================



This is your host IP address: 192.168.206.21
```

```
This is your host IPv6 address: ::1
Horizon is now available at http://192.168.206.21/dashboard
Keystone is serving at http://192.168.206.21/identity/
The default users are: admin and demo
The password: admin
2017-06-03 06:52:54.869 | WARNING:
2017-06-03 06:52:54.870 | Using lib/neutron-legacy is deprecated, and
it will be removed in the future
2017-06-03 06:52:54.870 | stack.sh completed in 1303 seconds.
```

更多课程：

http://edu.51cto.com/lecturer/9286589.html