

# 7. 가상화/하이퍼바이저

- [Openstack 공유](#)
  - [01. Openstack 패키지 설치](#)
  - [02. Openstack 기본설정](#)
  - [03. Openstack 인스턴스 생성](#)
  - [04. Openstack cli 사용](#)
- [Linux에서 VMWARE Player설치 에러 해결하기](#)
- [xenserver gpt disallow](#)
- [xenserver localdisk 리포지터리 구성](#)

# Openstack 공유

# 01. Openstack 패키지 설치

## Opensack 설치

### 1. 사전 사항

1. OS : Rocky Linux 8.4 (RHEL / Centos 8계열)
2. Openstack : Wallaby

### 2. Component 구성정보

#### 1. Node list

hostname	public ip	private ip	Component rule
openstack-dev1	172.10.10..41	192.168.20.11	control, compute
openstack-dev2	172.10.10..42	192.168.20.12	compute
openstack-dev3	172.10.10..43	192.168.20.13	network, storage

#### 2. Network Config

1. public : extnet - br-ex - ens3f0
2. private : physnet1 - br-vlan - ens3f1

### 3. Packstack 설치

#### 1. 언어셋 설정

```
$ yum install glibc-langpack-en -y

$ vi /etc/environment
LANG=en_US.utf-8
LC_ALL=en_US.utf-8
```

#### 2. NetworkManager / Firewall 중지

```
$ dnf install network-scripts -y
$ systemctl disable firewalld
$ systemctl stop firewalld
$ systemctl disable NetworkManager
$ systemctl stop NetworkManager
$ systemctl enable network --now
$ systemctl start network
```

#### 3. 리포지터리 구성 후 패키지 설치

```
$ dnf config-manager --enable powertools
$ dnf install -y https://www.rdoproject.org/repos/rdo-release.el8.rpm
$ dnf update -y
$ dnf install -y openstack-packstack
```

#### 4. packstack 설치를 위한 설정파일 생성

```
$ packstack --gen-answer-file=answer.txt
```

#### 5. Sample 파일- PW키는 임의로 {{ SET\_PASS }} 으로 변환했음

```
$ vi answer.txt
[general]
```

```
# Path to a public key to install on servers. If a usable key has not
# been installed on the remote servers, the user is prompted for a
# password and this key is installed so the password will not be
# required again.
CONFIG_SSH_KEY=/root/.ssh/id_rsa.pub

# Default password to be used everywhere (overridden by passwords set
# for individual services or users).
CONFIG_DEFAULT_PASSWORD=

# The amount of service workers/threads to use for each service.
# Useful to tweak when you have memory constraints. Defaults to the
# amount of cores on the system.
CONFIG_SERVICE_WORKERS=%{::processorcount}

# Specify 'y' to install MariaDB. [y, 'n']
CONFIG_MARIADB_INSTALL=y

# Specify 'y' to install OpenStack Image Service (glance). [y, 'n']
CONFIG_GLANCE_INSTALL=y

# Specify 'y' to install OpenStack Block Storage (cinder). [y, 'n']
CONFIG_CINDER_INSTALL=y

# Specify 'y' to install OpenStack Shared File System (manila). [y,
# 'n']
CONFIG_MANILA_INSTALL=n

# Specify 'y' to install OpenStack Compute (nova). [y, 'n']
CONFIG_NOVA_INSTALL=y

# Specify 'y' to install OpenStack Networking (neutron) [y]
CONFIG_NEUTRON_INSTALL=y

# Specify 'y' to install OpenStack Dashboard (horizon). [y, 'n']
CONFIG_HORIZON_INSTALL=y

# Specify 'y' to install OpenStack Object Storage (swift). [y, 'n']
CONFIG_SWIFT_INSTALL=y

# Specify 'y' to install OpenStack Metering (ceilometer). Note this
# will also automatically install gnocchi service and configures it as
# the metrics backend. [y, 'n']
CONFIG_CEILOMETER_INSTALL=n

# Specify 'y' to install OpenStack Telemetry Alarming (Aodh). Note
# Aodh requires Ceilometer to be installed as well. [y, 'n']
CONFIG_AODH_INSTALL=y

# Specify 'y' to install OpenStack Events Service (panko). [y, 'n']
CONFIG_PANKO_INSTALL=n

# Specify 'y' to install OpenStack Data Processing (sahara). In case
# of sahara installation packstack also installs heat.[y, 'n']
CONFIG_SAHARA_INSTALL=n

# Specify 'y' to install OpenStack Orchestration (heat). [y, 'n']
CONFIG_HEAT_INSTALL=y

# Specify 'y' to install OpenStack Container Infrastructure
# Management Service (magnum). [y, 'n']
CONFIG_MAGNUM_INSTALL=n

# Specify 'y' to install OpenStack Database (trove) [y, 'n']
CONFIG_TROVE_INSTALL=n

# Specify 'y' to install OpenStack Bare Metal Provisioning (ironic).
```

```
# [y, 'n']
CONFIG_IRONIC_INSTALL=n

# Specify 'y' to install the OpenStack Client packages (command-line
# tools). An admin "rc" file will also be installed. [y, 'n']
CONFIG_CLIENT_INSTALL=y

# Comma-separated list of NTP servers. Leave plain if Packstack
# should not install ntpd on instances.
CONFIG_NTP_SERVERS= time.bora.net

# Comma-separated list of servers to be excluded from the
# installation. This is helpful if you are running Packstack a second
# time with the same answer file and do not want Packstack to
# overwrite these server's configurations. Leave empty if you do not
# need to exclude any servers.
EXCLUDE_SERVERS=

# Specify 'y' if you want to run OpenStack services in debug mode;
# otherwise, specify 'n'. [y, 'n']
CONFIG_DEBUG_MODE=n

# Server on which to install OpenStack services specific to the
# controller role (for example, API servers or dashboard).
CONFIG_CONTROLLER_HOST=172.10.10..41

# List the servers on which to install the Compute service.
CONFIG_COMPUTE_HOSTS=172.10.10..41,172.10.10..42

# List of servers on which to install the network service such as
# Compute networking (nova network) or OpenStack Networking (neutron).
CONFIG_NETWORK_HOSTS=172.10.10..43

# Specify 'y' if you want to use VMware vCenter as hypervisor and
# storage; otherwise, specify 'n'. [y, 'n']
CONFIG_VMWARE_BACKEND=n

# Specify 'y' if you want to use unsupported parameters. This should
# be used only if you know what you are doing. Issues caused by using
# unsupported options will not be fixed before the next major release.
# [y, 'n']
CONFIG_UNSUPPORTED=n

# Specify 'y' if you want to use subnet addresses (in CIDR format)
# instead of interface names in following options:
# CONFIG_NEUTRON_OVS_BRIDGE_IFACES,
# CONFIG_NEUTRON_LB_INTERFACE_MAPPINGS, CONFIG_NEUTRON_OVS_TUNNEL_IF.
# This is useful for cases when interface names are not same on all
# installation hosts.
CONFIG_USE_SUBNETS=n

# IP address of the VMware vCenter server.
CONFIG_VCENTER_HOST=

# User name for VMware vCenter server authentication.
CONFIG_VCENTER_USER=

# Password for VMware vCenter server authentication.
CONFIG_VCENTER_PASSWORD=

# Comma separated list of names of the VMware vCenter clusters. Note:
# if multiple clusters are specified each one is mapped to one
# compute, otherwise all computes are mapped to same cluster.
CONFIG_VCENTER_CLUSTER_NAMES=

# (Unsupported!) Server on which to install OpenStack services
# specific to storage servers such as Image or Block Storage services.
CONFIG_STORAGE_HOST=172.10.10..41
```

```
# (Unsupported!) Server on which to install OpenStack services
# specific to OpenStack Data Processing (sahara).
CONFIG_SAHARA_HOST=172.10.10..41


# Comma-separated list of URLs for any additional yum repositories,
# to use for installation.
CONFIG_REPO=


# Specify 'y' to enable the RDO testing repository. ['y', 'n']
CONFIG_ENABLE_RDO_TESTING=n


# To subscribe each server with Red Hat Subscription Manager, include
# this with CONFIG_RH_PW.
CONFIG_RH_USER=


# To subscribe each server to receive updates from a Satellite
# server, provide the URL of the Satellite server. You must also
# provide a user name (CONFIG_SATELLITE_USERNAME) and password
# (CONFIG_SATELLITE_PASSWORD) or an access key (CONFIG_SATELLITE_AKEY)
# for authentication.
CONFIG_SATELLITE_URL=


# Specify a Satellite 6 Server to register to. If not specified,
# Packstack will register the system to the Red Hat server. When this
# option is specified, you also need to set the Satellite 6
# organization (CONFIG_RH_SAT6_ORG) and an activation key
# (CONFIG_RH_SAT6_KEY).
CONFIG_RH_SAT6_SERVER=


# To subscribe each server with Red Hat Subscription Manager, include
# this with CONFIG_RH_USER.
CONFIG_RH_PW=


# Specify 'y' to enable RHEL optional repositories. ['y', 'n']
CONFIG_RH_OPTIONAL=y


# HTTP proxy to use with Red Hat Subscription Manager.
CONFIG_RH_PROXY=


# Specify a Satellite 6 Server organization to use when registering
# the system.
CONFIG_RH_SAT6_ORG=


# Specify a Satellite 6 Server activation key to use when registering
# the system.
CONFIG_RH_SAT6_KEY=


# Port to use for Red Hat Subscription Manager's HTTP proxy.
CONFIG_RH_PROXY_PORT=


# User name to use for Red Hat Subscription Manager's HTTP proxy.
CONFIG_RH_PROXY_USER=


# Password to use for Red Hat Subscription Manager's HTTP proxy.
CONFIG_RH_PROXY_PW=


# User name to authenticate with the RHN Satellite server; if you
# intend to use an access key for Satellite authentication, leave this
# blank.
CONFIG_SATELLITE_USER=


# Password to authenticate with the RHN Satellite server; if you
# intend to use an access key for Satellite authentication, leave this
# blank.
CONFIG_SATELLITE_PW=


# Access key for the Satellite server; if you intend to use a user
# name and password for Satellite authentication, leave this blank.
```

CONFIG\_SATELLITE\_AKEY=

# Certificate path or URL of the certificate authority to verify that  
# the connection with the Satellite server is secure. If you are not  
# using Satellite in your deployment, leave this blank.

CONFIG\_SATELLITE\_CACERT=

# Profile name that should be used as an identifier for the system in  
# RHN Satellite (if required).

CONFIG\_SATELLITE\_PROFILE=

# Comma-separated list of flags passed to the rhnreg\_ks command.  
# Valid flags are: novirtinfo, norhnsd, nopackages ['novirtinfo',  
# 'norhnsd', 'nopackages']

CONFIG\_SATELLITE\_FLAGS=

# HTTP proxy to use when connecting to the RHN Satellite server (if  
# required).

CONFIG\_SATELLITE\_PROXY=

# User name to authenticate with the Satellite-server HTTP proxy.

CONFIG\_SATELLITE\_PROXY\_USER=

# User password to authenticate with the Satellite-server HTTP proxy.

CONFIG\_SATELLITE\_PROXY\_PW=

# Specify filepath for CA cert file. If CONFIG\_SSL\_CACERT\_SELFSIGN is  
# set to 'n' it has to be preexisting file.

CONFIG\_SSL\_CACERT\_FILE=/etc/pki/tls/certs/selfcert.crt

# Specify filepath for CA cert key file. If

# CONFIG\_SSL\_CACERT\_SELFSIGN is set to 'n' it has to be preexisting  
# file.

CONFIG\_SSL\_CACERT\_KEY\_FILE=/etc/pki/tls/private/selfkey.key

# Enter the path to use to store generated SSL certificates in.

CONFIG\_SSL\_CERT\_DIR=~/packstackca/

# Specify 'y' if you want Packstack to pregenerate the CA  
# Certificate.

CONFIG\_SSL\_CACERT\_SELFSIGN=y

# Enter the ssl certificates subject country.

CONFIG\_SSL\_CERT\_SUBJECT\_C=--

# Enter the ssl certificates subject state.

CONFIG\_SSL\_CERT\_SUBJECT\_ST=State

# Enter the ssl certificates subject location.

CONFIG\_SSL\_CERT\_SUBJECT\_L=City

# Enter the ssl certificates subject organization.

CONFIG\_SSL\_CERT\_SUBJECT\_O=openstack

# Enter the ssl certificates subject organizational unit.

CONFIG\_SSL\_CERT\_SUBJECT\_OU=packstack

# Enter the ssl certificates subject common name.

CONFIG\_SSL\_CERT\_SUBJECT\_CN=openstack-dev1

CONFIG\_SSL\_CERT\_SUBJECT\_MAIL=admin@openstack-dev1

# Service to be used as the AMQP broker. Allowed values are: rabbitmq

# ['rabbitmq']

CONFIG\_AMQP\_BACKEND=rabbitmq

# IP address of the server on which to install the AMQP service.

CONFIG\_AMQP\_HOST=172.10.10.41

```
# Specify 'y' to enable SSL for the AMQP service. ['y', 'n']
CONFIG_AMQP_ENABLE_SSL=n

# Specify 'y' to enable authentication for the AMQP service. ['y',
# 'n']
CONFIG_AMQP_ENABLE_AUTH=n

# Password for the NSS certificate database of the AMQP service.
CONFIG_AMQP_NSS_CERT

_PW=PW_PLACEHOLDER

# User for AMQP authentication.
CONFIG_AMQP_AUTH_USER=amqp_user

# Password for AMQP authentication.
CONFIG_AMQP_AUTH_PASSWORD=PW_PLACEHOLDER

# IP address of the server on which to install MariaDB. If a MariaDB
# installation was not specified in CONFIG_MARIADB_INSTALL, specify
# the IP address of an existing database server (a MariaDB cluster can
# also be specified).
CONFIG_MARIADB_HOST=172.10.10.41

# User name for the MariaDB administrative user.
CONFIG_MARIADB_USER=root

# Password for the MariaDB administrative user.
CONFIG_MARIADB_PW={{ SET_PASS }}

# Password to use for the Identity service (keystone) to access the
# database.
CONFIG_KEYSTONE_DB_PW={{ SET_PASS }}

# Enter y if cron job to rotate Fernet tokens should be created.
CONFIG_KEYSTONE_FERNET_TOKEN_ROTATE_ENABLE=True

# Default region name to use when creating tenants in the Identity
# service.
CONFIG_KEYSTONE_REGION=RegionOne

# Token to use for the Identity service API.
CONFIG_KEYSTONE_ADMIN_TOKEN={{ SET_PASS }}

# Email address for the Identity service 'admin' user. Defaults to
CONFIG_KEYSTONE_ADMIN_EMAIL=root@localhost

# User name for the Identity service 'admin' user. Defaults to
# 'admin'.
CONFIG_KEYSTONE_ADMIN_USERNAME=admin

# Password to use for the Identity service 'admin' user.
CONFIG_KEYSTONE_ADMIN_PW={{ SET_PASS }}

# Password to use for the Identity service 'demo' user.
CONFIG_KEYSTONE_DEMO_PW={{ SET_PASS }}

# Identity service API version string. ['v2.0', 'v3']
CONFIG_KEYSTONE_API_VERSION=v3

# Identity service token format (FERNET). Since Rocky, only FERNET is
# supported. ['FERNET']
CONFIG_KEYSTONE_TOKEN_FORMAT=FERNET

# Type of Identity service backend (sql or ldap). ['sql', 'ldap']
CONFIG_KEYSTONE_IDENTITY_BACKEND=sql
```

```

# URL for the Identity service LDAP backend.
CONFIG_KEYSTONE_LDAP_URL=ldap://172.10.10.41

# User DN for the Identity service LDAP backend. Used to bind to the
# LDAP server if the LDAP server does not allow anonymous
# authentication.
CONFIG_KEYSTONE_LDAP_USER_DN=

# User DN password for the Identity service LDAP backend.
CONFIG_KEYSTONE_LDAP_USER_PASSWORD=

# Base suffix for the Identity service LDAP backend.
CONFIG_KEYSTONE_LDAP_SUFFIX=

# Query scope for the Identity service LDAP backend. Use 'one' for
# onelevel/singleLevel or 'sub' for subtree/wholeSubtree ('base' is
# not actually used by the Identity service and is therefore
# deprecated). ['base', 'one', 'sub']
CONFIG_KEYSTONE_LDAP_QUERY_SCOPE=one

# Query page size for the Identity service LDAP backend.
CONFIG_KEYSTONE_LDAP_PAGE_SIZE=-1

# User subtree for the Identity service LDAP backend.
CONFIG_KEYSTONE_LDAP_USER_SUBTREE=

# User query filter for the Identity service LDAP backend.
CONFIG_KEYSTONE_LDAP_USER_FILTER=

# User object class for the Identity service LDAP backend.
CONFIG_KEYSTONE_LDAP_USER_OBJECTCLASS=

# User ID attribute for the Identity service LDAP backend.
CONFIG_KEYSTONE_LDAP_USER_ID_ATTRIBUTE=

# User name attribute for the Identity service LDAP backend.
CONFIG_KEYSTONE_LDAP_USER_NAME_ATTRIBUTE=

# User email address attribute for the Identity service LDAP backend.
CONFIG_KEYSTONE_LDAP_USER_MAIL_ATTRIBUTE=

# User-enabled attribute for the Identity service LDAP backend.
CONFIG_KEYSTONE_LDAP_USER_ENABLED_ATTRIBUTE=

# Bit mask integer applied to user-enabled attribute for the Identity
# service LDAP backend. Indicate the bit that the enabled value is
# stored in if the LDAP server represents "enabled" as a bit on an
# integer rather than a boolean. A value of "0" indicates the mask is
# not used (default). If this is not set to "0", the typical value is
# "2", typically used when
# "CONFIG_KEYSTONE_LDAP_USER_ENABLED_ATTRIBUTE = userAccountControl".
CONFIG_KEYSTONE_LDAP_USER_ENABLED_MASK=-1

# Value of enabled attribute which indicates user is enabled for the
# Identity service LDAP backend. This should match an appropriate
# integer value if the LDAP server uses non-boolean (bitmask) values
# to indicate whether a user is enabled or disabled. If this is not
# set as 'y', the typical value is "512". This is typically used when
# "CONFIG_KEYSTONE_LDAP_USER_ENABLED_ATTRIBUTE = userAccountControl".
CONFIG_KEYSTONE_LDAP_USER_ENABLED_DEFAULT=TRUE

# Specify 'y' if users are disabled (not enabled) in the Identity
# service LDAP backend (inverts boolean-enabled values). Some LDAP
# servers use a boolean lock attribute where "y" means an account is
# disabled. Setting this to 'y' allows these lock attributes to be
# used. This setting will have no effect if
# "CONFIG_KEYSTONE_LDAP_USER_ENABLED_MASK" is in use. ['n', 'y']
CONFIG_KEYSTONE_LDAP_USER_ENABLED_INVERT=n

```

```
# Comma-separated list of attributes stripped from LDAP user entry
# upon update.
CONFIG_KEYSTONE_LDAP_USER_ATTRIBUTE_IGNORE=

# Identity service LDAP attribute mapped to default_project_id for
# users.
CONFIG_KEYSTONE_LDAP_USER_DEFAULT_PROJECT_ID_ATTRIBUTE=

# Specify 'y' if you want to be able to create Identity service users
# through the Identity service interface; specify 'n' if you will
# create directly in the LDAP backend. ['n', 'y']
CONFIG_KEYSTONE_LDAP_USER_ALLOW_CREATE=n

# Specify 'y' if you want to be able to update Identity service users
# through the Identity service interface; specify 'n' if you will
# update directly in the LDAP backend. ['n', 'y']
CONFIG_KEYSTONE_LDAP_USER_ALLOW_UPDATE=n

# Specify 'y' if you want to be able to delete Identity service users
# through the Identity service interface; specify 'n' if you will
# delete directly in the LDAP backend. ['n', 'y']
CONFIG_KEYSTONE_LDAP_USER_ALLOW_DELETE=n

# Identity service LDAP attribute mapped to password.
CONFIG_KEYSTONE_LDAP_USER_PASS_ATTRIBUTE=

# DN of the group entry to hold enabled LDAP users when using enabled
# emulation.
CONFIG_KEYSTONE_LDAP_USER_ENABLED_EMULATION_DN=

# List of additional LDAP attributes for mapping additional attribute
# mappings for users. The attribute-mapping format is
# <ldap_attr>:<user_attr>, where ldap_attr is the attribute in the
# LDAP entry and user_attr is the Identity API attribute.
CONFIG_KEYSTONE_LDAP_USER_ADDITIONAL_ATTRIBUTE_MAPPING=

# Group subtree for the Identity service LDAP backend.
CONFIG_KEYSTONE_LDAP_GROUP_SUBTREE=

# Group query filter for the Identity service LDAP backend.
CONFIG_KEYSTONE_LDAP_GROUP_FILTER=

# Group object class for the Identity service LDAP backend.
CONFIG_KEYSTONE_LDAP_GROUP_OBJECTCLASS=

# Group ID attribute for the Identity service LDAP backend.
CONFIG_KEYSTONE_LDAP_GROUP_ID_ATTRIBUTE=

# Group name attribute for the Identity service LDAP backend.
CONFIG_KEYSTONE_LDAP_GROUP_NAME_ATTRIBUTE=

# Group member attribute for the Identity service LDAP backend.
CONFIG_KEYSTONE_LDAP_GROUP_MEMBER_ATTRIBUTE=

# Group description attribute for the Identity service LDAP backend.
CONFIG_KEYSTONE_LDAP_GROUP_DESC_ATTRIBUTE=

# Comma-separated list of attributes stripped from LDAP group entry
# upon update.
CONFIG_KEYSTONE_LDAP_GROUP_ATTRIBUTE_IGNORE=

# Specify 'y' if you want to be able to create Identity service
# groups through the Identity service interface; specify 'n' if you
# will create directly in the LDAP backend. ['n', 'y']
CONFIG_KEYSTONE_LDAP_GROUP_ALLOW_CREATE=n

# Specify 'y' if you want to be able to update Identity service
```

```
# groups through the Identity service interface; specify 'n' if you
# will update directly in the LDAP backend. ['n', 'y']
CONFIG_KEYSTONE_LDAP_GROUP_ALLOW_UPDATE=n

# Specify 'y' if you want to be able to delete Identity service
# groups through the Identity service interface; specify 'n' if you
# will delete directly in the LDAP backend. ['n', 'y']
CONFIG_KEYSTONE_LDAP_GROUP_ALLOW_DELETE=n

# List of additional LDAP attributes used for mapping additional
# attribute mappings for groups. The attribute=mapping format is
# <ldap_attr>:<group_attr>, where ldap_attr is the attribute in the
# LDAP entry and group_attr is the Identity API attribute.
CONFIG_KEYSTONE_LDAP_GROUP_ADDITIONAL_ATTRIBUTE_MAPPING=

# Specify 'y' if the Identity service LDAP backend should use TLS.
# ['n', 'y']
CONFIG_KEYSTONE_LDAP_USE_TLS=n

# CA certificate directory for Identity service LDAP backend (if TLS
# is used).
CONFIG_KEYSTONE_LDAP_TLS_CACERTDIR=

# CA certificate file for Identity service LDAP backend (if TLS is
# used).
CONFIG_KEYSTONE_LDAP_TLS_CACERTFILE=

# Certificate-checking strictness level for Identity service LDAP
# backend; valid options are: never, allow, demand. ['never', 'allow',
# 'demand']
CONFIG_KEYSTONE_LDAP_TLS_REQ_CERT=demand

# Password to use for the Image service (glance) to access the
# database.
CONFIG_GLANCE_DB_PW={{ SET_PASS }}

# Password to use for the Image service to authenticate with the
# Identity service.
CONFIG_GLANCE_KS_PW={{ SET_PASS }}

# Storage backend for the Image service (controls how the Image
# service stores disk images). Valid options are: file or swift
# (Object Storage). The Object Storage service must be enabled to use
# it as a working backend; otherwise, Packstack falls back to 'file'.
# ['file', 'swift']
CONFIG_GLANCE_BACKEND=file

# Password to use for the Block Storage service (cinder) to access
# the database.
CONFIG_CINDER_DB_PW={{ SET_PASS }}

# Enter y if cron job for removing soft deleted DB rows should be
# created.
CONFIG_CINDER_DB_PURGE_ENABLE=True

# Password to use for the Block Storage service to authenticate with
# the Identity service.
CONFIG_CINDER_KS_PW={{ SET_PASS }}

# Storage backend to use for the Block Storage service; valid options
# are: lvm, gluster, nfs, vmdk, netapp, solidfire. ['lvm', 'gluster',
# 'nfs', 'vmdk', 'netapp', 'solidfire']
CONFIG_CINDER_BACKEND=nfs

# Specify 'y' to create the Block Storage volumes group. That is,
# Packstack creates a raw disk image in /var/lib/cinder, and mounts it
# using a loopback device. This should only be used for testing on a
# proof-of-concept installation of the Block Storage service (a file-
# backed volume group is not suitable for production usage). ['y',
```

```
# 'n']
CONFIG_CINDER_VOLUMES_CREATE=y

# Specify a custom name for the lvm cinder volume group
CONFIG_CINDER_VOLUME_NAME=cinder-volumes

# Size of Block Storage volumes group. Actual volume size will be
# extended with 3% more space for VG metadata. Remember that the size
# of the volume group will restrict the amount of disk space that you
# can expose to Compute instances, and that the specified amount must
# be available on the device used for /var/lib/cinder.
CONFIG_CINDER_VOLUMES_SIZE=20G

# A single or comma-separated list of Red Hat Storage (gluster)
# volume shares to mount. Example: 'ip-address:/vol-name', 'domain
# :/vol-name'
CONFIG_CINDER_GLUSTER_MOUNTS=

# A single or comma-separated list of NFS exports to mount. Example:
# 'ip-address:/export-name'
CONFIG_CINDER_NFS_MOUNTS=192.168.20.13:/data

# Administrative user account name used to access the NetApp storage
# system or proxy server.
CONFIG_CINDER_NETAPP_LOGIN=

# Password for the NetApp administrative user account specified in
# the CONFIG_CINDER_NETAPP_LOGIN parameter.
CONFIG_CINDER_NETAPP_PASSWORD=

# Hostname (or IP address) for the NetApp storage system or proxy
# server.
CONFIG_CINDER_NETAPP_HOSTNAME=

# The TCP port to use for communication with the storage system or
# proxy. If not specified, Data ONTAP drivers will use 80 for HTTP and
# 443 for HTTPS; E-Series will use 8080 for HTTP and 8443 for HTTPS.
# Defaults to 80.
CONFIG_CINDER_NETAPP_SERVER_PORT=80

# Storage family type used on the NetApp storage system; valid
# options are ontap_7mode for using Data ONTAP operating in 7-Mode,
# ontap_cluster for using clustered Data ONTAP, or E-Series for NetApp
# E-Series. Defaults to ontap_cluster. ['ontap_7mode',
# 'ontap_cluster', 'eseries']
CONFIG_CINDER_NETAPP_STORAGE_FAMILY=ontap_cluster

# The transport protocol used when communicating with the NetApp
# storage system or proxy server. Valid values are http or https.
# Defaults to 'http'. ['http', 'https']
CONFIG_CINDER_NETAPP_TRANSPORT_TYPE=http

# Storage protocol to be used on the data path with the NetApp
# storage system; valid options are iscsi, fc, nfs. Defaults to nfs.
# ['iscsi', 'fc', 'nfs']
CONFIG_CINDER_NETAPP_STORAGE_PROTOCOL=nfs

# Quantity to be multiplied by the requested volume size to ensure
# enough space is available on the virtual storage server (Vserver) to
# fulfill the volume creation request. Defaults to 1.0.
CONFIG_CINDER_NETAPP_SIZE_MULTIPLIER=1.0

# Time period (in minutes) that is allowed to elapse after the image
# is last accessed, before it is deleted from the NFS image cache.
# When a cache-cleaning cycle begins, images in the cache that have
# not been accessed in the last M minutes, where M is the value of
# this parameter, are deleted from the cache to create free space on
# the NFS share. Defaults to 720.
```

CONFIG\_CINDER\_NETAPP\_EXPIRY\_THRES\_MINUTES=720

# If the percentage of available space for an NFS share has dropped  
# below the value specified by this parameter, the NFS image cache is  
# cleaned. Defaults to 20.

CONFIG\_CINDER\_NETAPP\_THRES\_AVL\_SIZE\_PERC\_START=20

# When the percentage of available space on an NFS share has reached  
# the percentage specified by this parameter, the driver stops  
# clearing files from the NFS image cache that have not been accessed  
# in the last M minutes, where M is the value of the  
# CONFIG\_CINDER\_NETAPP\_EXPIRY\_THRES\_MINUTES parameter. Defaults to 60.

CONFIG\_CINDER\_NETAPP\_THRES\_AVL\_SIZE\_PERC\_STOP=60

# Single or comma-separated list of NetApp NFS shares for Block  
# Storage to use. Format: ip-address:/export-name. Defaults to "".

CONFIG\_CINDER\_NETAPP\_NFS\_SHARES=

# File with the list of available NFS shares. Defaults to

# '/etc/cinder/shares.conf'.

CONFIG\_CINDER\_NETAPP\_NFS\_SHARES\_CONFIG=/etc/cinder/shares.conf

# This parameter is only utilized when the storage protocol is  
# configured to use iSCSI or FC. This parameter is used to restrict  
# provisioning to the specified controller volumes. Specify the value  
# of this parameter to be a comma separated list of NetApp controller  
# volume names to be used for provisioning. Defaults to "".

CONFIG\_CINDER\_NETAPP\_VOLUME\_LIST=

# The vFiler unit on which provisioning of block storage volumes will  
# be done. This parameter is only used by the driver when connecting  
# to an instance with a storage family of Data ONTAP operating in  
# 7-Mode Only use this parameter when utilizing the MultiStore feature  
# on the NetApp storage system. Defaults to "".

CONFIG\_CINDER\_NETAPP\_VFILER=

# The name of the config.conf stanza for a Data ONTAP (7-mode) HA  
# partner. This option is only used by the driver when connecting to  
# an instance with a storage family of Data ONTAP operating in 7-Mode,  
# and it is required if the storage protocol selected is FC. Defaults  
# to "".

CONFIG\_CINDER\_NETAPP\_PARTNER\_BACKEND\_NAME=

# This option specifies the virtual storage server (Vserver) name on  
# the storage cluster on which provisioning of block storage volumes  
# should occur. Defaults to "".

CONFIG\_CINDER\_NETAPP\_VSERVER=

# Restricts provisioning to the specified controllers. Value must be  
# a comma-separated list of controller hostnames or IP addresses to be  
# used for provisioning. This option is only utilized when the storage  
# family is configured to use E-Series. Defaults to "".

CONFIG\_CINDER\_NETAPP\_CONTROLLER\_IPS=

# Password for the NetApp E-Series storage array. Defaults to "".

CONFIG\_CINDER\_NETAPP\_SA\_PASSWORD=

# This option is used to define how the controllers in the E-Series  
# storage array will work with the particular operating system on the  
# hosts that are connected to it. Defaults to 'linux\_dm\_mp'

CONFIG\_CINDER\_NETAPP\_ESERIES\_HOST\_TYPE=linux\_dm\_mp

# Path to the NetApp E-Series proxy application on a proxy server.

# The value is combined with the value of the

# CONFIG\_CINDER\_NETAPP\_TRANSPORT\_TYPE, CONFIG\_CINDER\_NETAPP\_HOSTNAME,

# and CONFIG\_CINDER\_NETAPP\_HOSTNAME options to create the URL used by

# the driver to connect to the proxy application. Defaults to

# '/devmgr/v2'.

CONFIG\_CINDER\_NETAPP\_WEBSERVICE\_PATH=/devmgr/v2

```
# Restricts provisioning to the specified storage pools. Only dynamic
# disk pools are currently supported. The value must be a comma-
# separated list of disk pool names to be used for provisioning.
# Defaults to ".
CONFIG_CINDER_NETAPP_STORAGE_POOLS=

# Cluster admin account name used to access the SolidFire storage
# system.
CONFIG_CINDER_SOLIDFIRE_LOGIN=

# Password for the SolidFire cluster admin user account specified in
# the CONFIG_CINDER_SOLIDFIRE_LOGIN parameter.
CONFIG_CINDER_SOLIDFIRE_PASSWORD=

# Hostname (or IP address) for the SolidFire storage system's MVIP.
CONFIG_CINDER_SOLIDFIRE_HOSTNAME=

# Password to use for OpenStack Bare Metal Provisioning (ironic) to
# access the database.
CONFIG_IRONIC_DB_PW=PW_PLACEHOLDER

# Password to use for OpenStack Bare Metal Provisioning to
# authenticate with the Identity service.
CONFIG_IRONIC_KS_PW=PW_PLACEHOLDER

# Enter y if cron job for removing soft deleted DB rows should be
# created.
CONFIG_NOVA_DB_PURGE_ENABLE=True

# Password to use for the Compute service (nova) to access the
# database.
CONFIG_NOVA_DB_PW=c09650d78c1b45db

# Password to use for the Compute service to authenticate with the
# Identity service.
CONFIG_NOVA_KS_PW=96fa26e1400749c6

# Whether or not Packstack should manage a default initial set of
# Nova flavors. Defaults to 'y'.
CONFIG_NOVA_MANAGE_FLAVORS=y

# Overcommitment ratio for virtual to physical CPUs. Specify 1.0 to
# disable CPU overcommitment.
CONFIG_NOVA_SCHED_CPU_ALLOC_RATIO=16.0

# Overcommitment ratio for virtual to physical RAM. Specify 1.0 to
# disable RAM overcommitment.
CONFIG_NOVA_SCHED_RAM_ALLOC_RATIO=1.5

# Protocol used for instance migration. Valid options are: ssh and
# tcp. Note that the tcp protocol is not encrypted, so it is insecure.
# ['ssh', 'tcp']
CONFIG_NOVA_COMPUTE_MIGRATE_PROTOCOL=ssh

# PEM encoded certificate to be used for ssl on the https server,
# leave blank if one should be generated, this certificate should not
# require a passphrase. If CONFIG_HORIZON_SSL is set to 'n' this
# parameter is ignored.
CONFIG_VNC_SSL_CERT=

# SSL keyfile corresponding to the certificate if one was entered. If
# CONFIG_HORIZON_SSL is set to 'n' this parameter is ignored.
CONFIG_VNC_SSL_KEY=

# Enter the PCI passthrough array of hash in JSON style for
# controller eg. [{"vendor_id":"1234", "product_id":"5678",
# "name":"default"}, {...}]
```

CONFIG\_NOVA\_PCI\_ALIAS=

# Enter the PCI passthrough whitelist array of hash in JSON style for  
# controller eg. [{"vendor\_id":"1234", "product\_id":"5678",  
# "name":"default"}, {...}]

CONFIG\_NOVA\_PCI\_PASSTHROUGH\_WHITELIST=

# The hypervisor driver to use with Nova. Can be either 'qemu' or  
# 'kvm'. Defaults to 'qemu' on virtual machines and 'kvm' on bare  
# metal hardware. For nested KVM set it explicitly to 'kvm'.

CONFIG\_NOVA\_LIBVIRT\_VIRT\_TYPE=%{::default\_hypervisor}

# Password to use for OpenStack Networking (neutron) to authenticate  
# with the Identity service.

CONFIG\_NEUTRON\_KS\_PW={{ SET\_PASS }}

# The password to use for OpenStack Networking to access the  
# database.

CONFIG\_NEUTRON\_DB\_PW={{ SET\_PASS }}

# The name of the Open vSwitch bridge (or empty for linuxbridge) for  
# the OpenStack Networking L3 agent to use for external traffic.  
# Specify 'provider' if you intend to use a provider network to handle  
# external traffic.

CONFIG\_NEUTRON\_L3\_EXT\_BRIDGE=br-ex

# Password for the OpenStack Networking metadata agent.

CONFIG\_NEUTRON\_METADATA\_PW={{ SET\_PASS }}

# Specify 'y' to install OpenStack Networking's L3 Metering agent  
# ['y', 'n']

CONFIG\_NEUTRON\_METERING\_AGENT\_INSTALL=y

# Specify 'y' to configure OpenStack Networking's Firewall-

# as-a-Service (FWaaS). ['y', 'n']

CONFIG\_NEUTRON\_FWAAS=n

# Specify 'y' to configure OpenStack Networking's VPN-as-a-Service

# (VPNaaS). ['y', 'n']

CONFIG\_NEUTRON\_VPNAAS=n

# Comma-separated list of network-type driver entry points to be  
# loaded from the neutron.ml2.type\_drivers namespace. ['local',  
# 'flat', 'vlan', 'gre', 'vxlan', 'geneve']

CONFIG\_NEUTRON\_ML2\_TYPE\_DRIVERS=geneve,flat,vxlan,vlan

# Comma-separated, ordered list of network types to allocate as  
# tenant networks. The 'local' value is only useful for single-box  
# testing and provides no connectivity between hosts. ['local',  
# 'vlan', 'gre', 'vxlan', 'geneve']

CONFIG\_NEUTRON\_ML2\_TENANT\_NETWORK\_TYPES=geneve,vxlan

# Comma-separated ordered list of networking mechanism driver entry  
# points to be loaded from the neutron.ml2.mechanism\_drivers  
# namespace. ['logger', 'test', 'linuxbridge', 'openvswitch',  
# 'hyperv', 'ncs', 'arista', 'cisco\_nexus', 'mlnx', 'l2population',  
# 'sriovnicswitch', 'ovn']

CONFIG\_NEUTRON\_ML2\_MECHANISM\_DRIVERS=openvswitch

# Comma-separated list of physical\_network names with which flat  
# networks can be created. Use \* to allow flat networks with arbitrary  
# physical\_network names.

CONFIG\_NEUTRON\_ML2\_FLAT\_NETWORKS=\*

# Comma-separated list of <physical\_network>:<vlan\_min>:<vlan\_max> or  
# <physical\_network> specifying physical\_network names usable for VLAN  
# provider and tenant networks, as well as ranges of VLAN tags on each  
# available for allocation to tenant networks.

CONFIG\_NEUTRON\_ML2\_VLAN\_RANGES=

```

# Comma-separated list of <tun_min>:<tun_max> tuples enumerating
# ranges of GRE tunnel IDs that are available for tenant-network
# allocation. A tuple must be an array with tun_max +1 - tun_min >
# 1000000.
CONFIG_NEUTRON_ML2_TUNNEL_ID_RANGES=

# Comma-separated list of addresses for VXLAN multicast group. If
# left empty, disables VXLAN from sending allocate broadcast traffic
# (disables multicast VXLAN mode). Should be a Multicast IP (v4 or v6)
# address.
CONFIG_NEUTRON_ML2_VXLAN_GROUP=

# Comma-separated list of <vni_min>:<vni_max> tuples enumerating
# ranges of VXLAN VNI IDs that are available for tenant network
# allocation. Minimum value is 0 and maximum value is 16777215.
CONFIG_NEUTRON_ML2_VNI_RANGES=10:100

# Name of the L2 agent to be used with OpenStack Networking.
# ['linuxbridge', 'openvswitch', 'ovn']
CONFIG_NEUTRON_L2_AGENT=openvswitch

# Comma-separated list of interface mappings for the OpenStack
# Networking ML2 SRIOV agent. Each tuple in the list must be in the
# format <physical_network>:<net_interface>. Example:
# physnet1:eth1,physnet2:eth2,physnet3:eth3.
CONFIG_NEUTRON_ML2_SRIOV_INTERFACE_MAPPINGS=

# Comma-separated list of interface mappings for the OpenStack
# Networking linuxbridge plugin. Each tuple in the list must be in the
# format <physical_network>:<net_interface>. Example:
# physnet1:eth1,physnet2:eth2,physnet3:eth3.
CONFIG_NEUTRON_LB_INTERFACE_MAPPINGS=

# Comma-separated list of bridge mappings for the OpenStack
# Networking Open vSwitch plugin. Each tuple in the list must be in
# the format <physical_network>:<ovs_bridge>. Example: physnet1:br-
# eth1,physnet2:br-eth2,physnet3:br-eth3
CONFIG_NEUTRON_OVS_BRIDGE_MAPPINGS=extnet:br-ex,physnet1:br-vlan

# Comma-separated list of colon-separated Open vSwitch
# <bridge>:<interface> pairs. The interface will be added to the
# associated bridge. If you desire the bridge to be persistent a value
# must be added to this directive, also
# CONFIG_NEUTRON_OVS_BRIDGE_MAPPINGS must be set in order to create
# the proper port. This can be achieved from the command line by
# issuing the following command: packstack --allinone --os-neutron-
# ovs-bridge-mappings=ext-net:br-ex --os-neutron-ovs-bridge-interfaces
# =br-ex:eth0
CONFIG_NEUTRON_OVS_BRIDGE_IFACES=br-ex:ens3f0,br-vlan:ens3f1

# Comma-separated list of Open vSwitch bridges that must be created
# and connected to interfaces in compute nodes when flat or vlan type
# drivers are enabled. These bridges must exist in
# CONFIG_NEUTRON_OVS_BRIDGE_MAPPINGS and
# CONFIG_NEUTRON_OVS_BRIDGE_IFACES. Example: --os-neutron-ovs-bridges-
# compute=br-vlan --os-neutron-ovs-bridge-mappings="extnet:br-
# ex,physnet1:br-vlan" --os-neutron-ovs-bridge-interfaces="br-ex:eth1
# ,br-vlan:eth2"
CONFIG_NEUTRON_OVS_BRIDGES_COMPUTE=br-vlan

# Name of physical network used for external network when enabling
# CONFIG_PROVISION_DEMO. Name must be one of the included in
# CONFIG_NEUTRON_OVS_BRIDGE_MAPPINGS. Example: --os-neutron-ovs-
# bridge-mappings="extnet:br-ex,physnet1:br-vlan" --os-neutron-ovs-
# bridge-interfaces="br-ex:eth1,br-vlan:eth2" --os-neutron-ovs-
# external-physnet="extnet"
CONFIG_NEUTRON_OVS_EXTERNAL_PHYSNET=extnet

```

```

# Interface for the Open vSwitch tunnel. Packstack overrides the IP
# address used for tunnels on this hypervisor to the IP found on the
# specified interface (for example, eth1).
CONFIG_NEUTRON_OVS_TUNNEL_IF=

# Comma-separated list of subnets (for example,
# 192.168.10.0/24,192.168.11.0/24) used for sending tunneling packets.
# This is used to configure IP filtering to accept tunneling packets
# from these subnets instead of specific IP addresses of peer nodes.
# This is useful when you add existing nodes to EXCLUDE_SERVERS
# because, in this case, packstack cannot modify the IP filtering of
# the existing nodes.
CONFIG_NEUTRON_OVS_TUNNEL_SUBNETS=

# VXLAN UDP port.
CONFIG_NEUTRON_OVS_VXLAN_UDP_PORT=4789

# Comma-separated list of bridge mappings for the OpenStack
# Networking Open Virtual Network plugin. Each tuple in the list must
# be in the format <physical_network>:<ovs_bridge>. Example: physnet1
# :br-eth1,physnet2:br-eth2,physnet3:br-eth3
CONFIG_NEUTRON_OVN_BRIDGE_MAPPINGS=extnet:br-ex

# Comma-separated list of colon-separated Open vSwitch
# <bridge>:<interface> pairs. The interface will be added to the
# associated bridge. If you desire the bridge to be persistent a value
# must be added to this directive, also
# CONFIG_NEUTRON_OVN_BRIDGE_MAPPINGS must be set in order to create
# the proper port. This can be achieved from the command line by
# issuing the following command: packstack --allinone --os-neutron-
# ovn-bridge-mappings=ext-net:br-ex --os-neutron-ovn-bridge-interfaces
# =br-ex:eth0
CONFIG_NEUTRON_OVN_BRIDGE_IFACES=

# Comma-separated list of Open vSwitch bridges that must be created
# and connected to interfaces in compute nodes when flat or vlan type
# drivers are enabled. These bridges must exist in
# CONFIG_NEUTRON_OVN_BRIDGE_MAPPINGS and
# CONFIG_NEUTRON_OVN_BRIDGE_IFACES. Example: --os-neutron-ovn-bridges-
# compute=br-vlan --os-neutron-ovn-bridge-mappings="extnet:br-
# ex,physnet1:br-vlan" --os-neutron-ovn-bridge-interfaces="br-ex:eth1
# ,br-vlan:eth2"
CONFIG_NEUTRON_OVN_BRIDGES_COMPUTE=

# Name of physical network used for external network when enabling
# CONFIG_PROVISION_DEMO. Name must be one of the included in
# CONFIG_NEUTRON_OVN_BRIDGE_MAPPINGS. Example: --os-neutron-ovn-
# bridge-mappings="extnet:br-ex,physnet1:br-vlan" --os-neutron-ovn-
# bridge-interfaces="br-ex:eth1,br-vlan:eth2" --os-neutron-ovn-
# external-physnet="extnet"
CONFIG_NEUTRON_OVN_EXTERNAL_PHYSNET=extnet

# Interface for the Open vSwitch tunnel. Packstack overrides the IP
# address used for tunnels on this hypervisor to the IP found on the
# specified interface (for example, eth1).
CONFIG_NEUTRON_OVN_TUNNEL_IF=

# Comma-separated list of subnets (for example,
# 192.168.10.0/24,192.168.11.0/24) used for sending tunneling packets.
# This is used to configure IP filtering to accept tunneling packets
# from these subnets instead of specific IP addresses of peer nodes.
# This is useful when you add existing nodes to EXCLUDE_SERVERS
# because, in this case, packstack cannot modify the IP filtering of
# the existing nodes.
CONFIG_NEUTRON_OVN_TUNNEL_SUBNETS=

# Password to use for the OpenStack File Share service (manila) to
# access the database.

```

CONFIG\_MANILA\_DB\_PW=PW\_PLACEHOLDER

# Password to use for the OpenStack File Share service (manila) to  
# authenticate with the Identity service.

CONFIG\_MANILA\_KS\_PW=PW\_PLACEHOLDER

# Backend for the OpenStack File Share service (manila); valid  
# options are: generic, netapp, glusternative, or glusterfs.  
# ['generic', 'netapp', 'glusternative', 'glusterfs']

CONFIG\_MANILA\_BACKEND=generic

# Denotes whether the driver should handle the responsibility of  
# managing share servers. This must be set to false if the driver is  
# to operate without managing share servers. Defaults to 'false'  
# ['true', 'false']

CONFIG\_MANILA\_NETAPP\_DRV\_HANDLES\_SHARE\_SERVERS=false

# The transport protocol used when communicating with the storage  
# system or proxy server. Valid values are 'http' and 'https'.  
# Defaults to 'https'. ['https', 'http']

CONFIG\_MANILA\_NETAPP\_TRANSPORT\_TYPE=https

# Administrative user account name used to access the NetApp storage  
# system. Defaults to "".

CONFIG\_MANILA\_NETAPP\_LOGIN=admin

# Password for the NetApp administrative user account specified in  
# the CONFIG\_MANILA\_NETAPP\_LOGIN parameter. Defaults to "".

CONFIG\_MANILA\_NETAPP\_PASSWORD=

# Hostname (or IP address) for the NetApp storage system or proxy  
# server. Defaults to "".

CONFIG\_MANILA\_NETAPP\_SERVER\_HOSTNAME=

# The storage family type used on the storage system; valid values  
# are ontap\_cluster for clustered Data ONTAP. Defaults to  
# 'ontap\_cluster'. ['ontap\_cluster']

CONFIG\_MANILA\_NETAPP\_STORAGE\_FAMILY=ontap\_cluster

# The TCP port to use for communication with the storage system or  
# proxy server. If not specified, Data ONTAP drivers will use 80 for  
# HTTP and 443 for HTTPS. Defaults to '443'.

CONFIG\_MANILA\_NETAPP\_SERVER\_PORT=443

# Pattern for searching available aggregates for NetApp provisioning.  
# Defaults to '(.\*)'.

CONFIG\_MANILA\_NETAPP\_AGGREGATE\_NAME\_SEARCH\_PATTERN=(.\*)

# Name of aggregate on which to create the NetApp root volume. This  
# option only applies when the option  
# CONFIG\_MANILA\_NETAPP\_DRV\_HANDLES\_SHARE\_SERVERS is set to True.

CONFIG\_MANILA\_NETAPP\_ROOT\_VOLUME\_AGGREGATE=

# NetApp root volume name. Defaults to 'root'.

CONFIG\_MANILA\_NETAPP\_ROOT\_VOLUME\_NAME=root

# This option specifies the storage virtual machine (previously  
# called a Vserver) name on the storage cluster on which provisioning  
# of shared file systems should occur. This option only applies when  
# the option driver\_handles\_share\_servers is set to False. Defaults to  
# "".

CONFIG\_MANILA\_NETAPP\_VSERVER=

# Denotes whether the driver should handle the responsibility of  
# managing share servers. This must be set to false if the driver is  
# to operate without managing share servers. Defaults to 'true'.  
# ['true', 'false']

CONFIG\_MANILA\_GENERIC\_DRV\_HANDLES\_SHARE\_SERVERS=true

```
# Volume name template for Manila service. Defaults to 'manila-
# share-%s'.
CONFIG_MANILA_GENERIC_VOLUME_NAME_TEMPLATE=manila-share-%s

# Share mount path for Manila service. Defaults to '/shares'.
CONFIG_MANILA_GENERIC_SHARE_MOUNT_PATH=/shares

# Location of disk image for Manila service instance. Defaults to '
CONFIG_MANILA_SERVICE_IMAGE_LOCATION=https://www.dropbox.com/s/vi5oeh10q1qkckh/ubuntu_1204_nfs_cifs.qcow2

# User in Manila service instance.
CONFIG_MANILA_SERVICE_INSTANCE_USER=ubuntu

# Password to service instance user.
CONFIG_MANILA_SERVICE_INSTANCE_PASSWORD=ubuntu

# Type of networking that the backend will use. A more detailed
# description of each option is available in the Manila docs. Defaults
# to 'neutron'. ['neutron', 'nova-network', 'standalone']
CONFIG_MANILA_NETWORK_TYPE=neutron

# Gateway IPv4 address that should be used. Required. Defaults to ".
CONFIG_MANILA_NETWORK_STANDALONE_GATEWAY=

# Network mask that will be used. Can be either decimal like '24' or
# binary like '255.255.255.0'. Required. Defaults to ".
CONFIG_MANILA_NETWORK_STANDALONE_NETMASK=

# Set it if network has segmentation (VLAN, VXLAN, etc). It will be
# assigned to share-network and share drivers will be able to use this
# for network interfaces within provisioned share servers. Optional.
# Example: 1001. Defaults to ".
CONFIG_MANILA_NETWORK_STANDALONE_SEG_ID=

# Can be IP address, range of IP addresses or list of addresses or
# ranges. Contains addresses from IP network that are allowed to be
# used. If empty, then will be assumed that all host addresses from
# network can be used. Optional. Examples: 10.0.0.10 or
# 10.0.0.10-10.0.0.20 or
# 10.0.0.10-10.0.0.20,10.0.0.30-10.0.0.40,10.0.0.50. Defaults to ".
CONFIG_MANILA_NETWORK_STANDALONE_IP_RANGE=

# IP version of network. Optional. Defaults to '4'. ['4', '6']
CONFIG_MANILA_NETWORK_STANDALONE_IP_VERSION=4

# List of GlusterFS servers that can be used to create shares. Each
# GlusterFS server should be of the form [remoteuser@]<volserver>, and
# they are assumed to belong to distinct Gluster clusters.
CONFIG_MANILA_GLUSTERFS_SERVERS=

# Path of Manila host's private SSH key file.
CONFIG_MANILA_GLUSTERFS_NATIVE_PATH_TO_PRIVATE_KEY=

# Regular expression template used to filter GlusterFS volumes for
# share creation. The regex template can optionally (ie. with support
# of the GlusterFS backend) contain the #{size} parameter which
# matches an integer (sequence of digits) in which case the value
# shall be interpreted as size of the volume in GB. Examples: "manila-
# share-volume-d+$", "manila-share-volume-#{size}G-d+$"; with matching
# volume names, respectively: "manila-share-volume-12", "manila-share-
# volume-3G-13". In latter example, the number that matches "#{size}",
# that is, 3, is an indication that the size of volume is 3G.
CONFIG_MANILA_GLUSTERFS_VOLUME_PATTERN=

# Specifies the GlusterFS volume to be mounted on the Manila host.
# For e.g: [remoteuser@]<volserver>:<valid>
CONFIG_MANILA_GLUSTERFS_TARGET=
```

```
# Base directory containing mount points for Gluster volumes.
CONFIG_MANILA_GLUSTERFS_MOUNT_POINT_BASE=

# Type of NFS server that mediate access to the Gluster volumes
# (Gluster or Ganesha).
CONFIG_MANILA_GLUSTERFS_NFS_SERVER_TYPE=gluster

# Path of Manila host's private SSH key file.
CONFIG_MANILA_GLUSTERFS_PATH_TO_PRIVATE_KEY=

# Remote Ganesha server node's IP address.
CONFIG_MANILA_GLUSTERFS_GANESHA_SERVER_IP=

# Specify 'y' to set up Horizon communication over https. ['y', 'n']
CONFIG_HORIZON_SSL=n

# Secret key to use for Horizon Secret Encryption Key.
CONFIG_HORIZON_SECRET_KEY=0275c625ea7d401fa655bbc49c4ef0fb

# PEM-encoded certificate to be used for SSL connections on the https
# server. To generate a certificate, leave blank.
CONFIG_HORIZON_SSL_CERT=

# SSL keyfile corresponding to the certificate if one was specified.
# The certificate should not require a passphrase.
CONFIG_HORIZON_SSL_KEY=

CONFIG_HORIZON_SSL_CACERT=

# Password to use for the Object Storage service to authenticate with
# the Identity service.
CONFIG_SWIFT_KS_PW={{ SET_PASS }}

# Comma-separated list of devices to use as storage device for Object
# Storage. Each entry must take the format /path/to/dev (for example,
# specifying /dev/vdb installs /dev/vdb as the Object Storage storage
# device; Packstack does not create the filesystem, you must do this
# first). If left empty, Packstack creates a loopback device for test
# setup.
CONFIG_SWIFT_STORAGES=

# Number of Object Storage storage zones; this number MUST be no
# larger than the number of configured storage devices.
CONFIG_SWIFT_STORAGE_ZONES=1

# Number of Object Storage storage replicas; this number MUST be no
# larger than the number of configured storage zones.
CONFIG_SWIFT_STORAGE_REPLICAS=1

# File system type for storage nodes. ['xfs', 'ext4']
CONFIG_SWIFT_STORAGE_FSTYPE=ext4

# Custom seed number to use for swift_hash_path_suffix in
# /etc/swift/swift.conf. If you do not provide a value, a seed number
# is automatically generated.
CONFIG_SWIFT_HASH=b0bd07663dff4aa6

# Size of the Object Storage loopback file storage device.
CONFIG_SWIFT_STORAGE_SIZE=2G

# Password used by Orchestration service user to authenticate against
# the database.
CONFIG_HEAT_DB_PW={{ SET_PASS }}

# Encryption key to use for authentication in the Orchestration
# database (16, 24, or 32 chars).
CONFIG_HEAT_AUTH_ENC_KEY={{ SET_PASS }}
```

```
# Password to use for the Orchestration service to authenticate with
# the Identity service.
CONFIG_HEAT_KS_PW={{ SET_PASS }}

# Specify 'y' to install the Orchestration CloudFormation API. ['y',
# 'n']
CONFIG_HEAT_CFN_INSTALL=y

# Name of the Identity domain for Orchestration.
CONFIG_HEAT_DOMAIN=heat

# Name of the Identity domain administrative user for Orchestration.
CONFIG_HEAT_DOMAIN_ADMIN=heat_admin

# Password for the Identity domain administrative user for
# Orchestration.
CONFIG_HEAT_DOMAIN_PASSWORD=3da8995d89de4321

# Specify 'y' to provision for demo usage and testing. ['y', 'n']
CONFIG_PROVISION_DEMO=n

# Specify 'y' to configure the OpenStack Integration Test Suite
# (tempest) for testing. The test suite requires OpenStack Networking
# to be installed. ['y', 'n']
CONFIG_PROVISION_TEMPEST=n

# CIDR network address for the floating IP subnet.
CONFIG_PROVISION_DEMO_FLOATRANGE=172.24.4.0/24

# Allocation pools in the floating IP subnet.
CONFIG_PROVISION_DEMO_ALLOCATION_POOLS=[]

# The name to be assigned to the demo image in Glance (default
# "cirros").
CONFIG_PROVISION_IMAGE_NAME=cirros

# A URL or local file location for an image to download and provision
# in Glance (defaults to a URL for a recent "cirros" image).
CONFIG_PROVISION_IMAGE_URL=https://download.cirros-cloud.net/0.3.5/cirros-0.3.5-x86_64-disk.img

# Format for the demo image (default "qcow2").
CONFIG_PROVISION_IMAGE_FORMAT=qcow2

# Properties of the demo image (none by default).
CONFIG_PROVISION_IMAGE_PROPERTIES=

# User to use when connecting to instances booted from the demo
# image.
CONFIG_PROVISION_IMAGE_SSH_USER=cirros

# Name of the uec image created in Glance used in tempest tests
# (default "cirros-uec").
CONFIG_PROVISION_UEC_IMAGE_NAME=cirros-uec

# URL of the kernel image copied to Glance image for uec image
# (defaults to a URL for a recent "cirros" uec image).
CONFIG_PROVISION_UEC_IMAGE_KERNEL_URL=https://download.cirros-cloud.net/0.3.5/cirros-0.3.5-x86_64-kernel

# URL of the ramdisk image copied to Glance image for uec image
# (defaults to a URL for a recent "cirros" uec image).
CONFIG_PROVISION_UEC_IMAGE_RAMDISK_URL=https://download.cirros-cloud.net/0.3.5/cirros-0.3.5-x86_64-initramfs

# URL of the disk image copied to Glance image for uec image
# (defaults to a URL for a recent "cirros" uec image).
CONFIG_PROVISION_UEC_IMAGE_DISK_URL=https://download.cirros-cloud.net/0.3.5/cirros-0.3.5-x86_64-disk.img

CONFIG_TEMPEST_HOST=

# Name of the Integration Test Suite provisioning user. If you do not
```

```
# provide a user name, Tempest is configured in a standalone mode.
CONFIG_PROVISION_TEMPEST_USER=

# Password to use for the Integration Test Suite provisioning user.
CONFIG_PROVISION_TEMPEST_USER_PW=PW_PLACEHOLDER

# CIDR network address for the floating IP subnet.
CONFIG_PROVISION_TEMPEST_FLOATRANGE=172.24.4.0/24

# Primary flavor name to use in Tempest.
CONFIG_PROVISION_TEMPEST_FLAVOR_NAME=m1.nano

# Primary flavor's disk quota in Gb.
CONFIG_PROVISION_TEMPEST_FLAVOR_DISK=1

# Primary flavor's ram in Mb.
CONFIG_PROVISION_TEMPEST_FLAVOR_RAM=128

# Primary flavor's vcpus number.
CONFIG_PROVISION_TEMPEST_FLAVOR_VCPUS=1

# Alternative flavor name to use in Tempest.
CONFIG_PROVISION_TEMPEST_FLAVOR_ALT_NAME=m1.micro

# Alternative flavor's disk quota in Gb.
CONFIG_PROVISION_TEMPEST_FLAVOR_ALT_DISK=1

# Alternative flavor's ram in Mb.
CONFIG_PROVISION_TEMPEST_FLAVOR_ALT_RAM=128

# Alternative flavor's vcpus number.
CONFIG_PROVISION_TEMPEST_FLAVOR_ALT_VCPUS=1

# Specify 'y' to run Tempest smoke test as last step of installation.
CONFIG_RUN_TEMPEST=n

# Test suites to run, example: "smoke dashboard TelemetryAlarming".
# Optional, defaults to "smoke".
CONFIG_RUN_TEMPEST_TESTS=smoke

# Tests to skip, example: "test_basic_scenario test_volume".
# Optional, defaults to "".
CONFIG_SKIP_TEMPEST_TESTS=

# Specify 'y' to configure the Open vSwitch external bridge for an
# all-in-one deployment (the L3 external bridge acts as the gateway
# for virtual machines). ['y', 'n']
CONFIG_PROVISION_OVS_BRIDGE=y

# Password to use for Gnocchi to access the database.
CONFIG_GNOCCHI_DB_PW=PW_PLACEHOLDER

# Password to use for Gnocchi to authenticate with the Identity
# service.
CONFIG_GNOCCHI_KS_PW=PW_PLACEHOLDER

# Secret key for signing Telemetry service (ceilometer) messages.
CONFIG_CEILOMETER_SECRET={{ SET_PASS }}

# Password to use for Telemetry to authenticate with the Identity
# service.
CONFIG_CEILOMETER_KS_PW=PW_PLACEHOLDER

# Ceilometer service name. ['httpd', 'ceilometer']
CONFIG_CEILOMETER_SERVICE_NAME=httpd

# Backend driver for Telemetry's group membership coordination.
# ['redis', 'none']
```

```
CONFIG_CEILOMETER_COORDINATION_BACKEND=redis

# Whether to enable ceilometer middleware in swift proxy. By default
# this should be false to avoid unnecessary load.
CONFIG_ENABLE_CEILOMETER_MIDDLEWARE=n

# IP address of the server on which to install the Redis server.
CONFIG_REDIS_HOST=172.10.10.41

# Port on which the Redis server listens.
CONFIG_REDIS_PORT=6379

# Password to use for Telemetry Alarming to authenticate with the
# Identity service.
CONFIG_AODH_KS_PW=PW_PLACEHOLDER

# Password to use for Telemetry Alarming (AODH) to access the
# database.
CONFIG_AODH_DB_PW=PW_PLACEHOLDER

# Password to use for Panko to access the database.
CONFIG_PANKO_DB_PW=PW_PLACEHOLDER

# Password to use for Panko to authenticate with the Identity
# service.
CONFIG_PANKO_KS_PW=PW_PLACEHOLDER

# Password to use for OpenStack Database-as-a-Service (trove) to
# access the database.
CONFIG_TROVE_DB_PW=PW_PLACEHOLDER

# Password to use for OpenStack Database-as-a-Service to authenticate
# with the Identity service.
CONFIG_TROVE_KS_PW=PW_PLACEHOLDER

# User name to use when OpenStack Database-as-a-Service connects to
# the Compute service.
CONFIG_TROVE_NOVA_USER=trove

# Tenant to use when OpenStack Database-as-a-Service connects to the
# Compute service.
CONFIG_TROVE_NOVA_TENANT=services

# Password to use when OpenStack Database-as-a-Service connects to
# the Compute service.
CONFIG_TROVE_NOVA_PW=PW_PLACEHOLDER

# Password to use for OpenStack Data Processing (sahara) to access
# the database.
CONFIG_SAHARA_DB_PW=PW_PLACEHOLDER

# Password to use for OpenStack Data Processing to authenticate with
# the Identity service.
CONFIG_SAHARA_KS_PW=PW_PLACEHOLDER

# Password to use for the Magnum to access the database.
CONFIG_MAGNUM_DB_PW=PW_PLACEHOLDER

# Password to use for the Magnum to authenticate with the Identity
# service.
CONFIG_MAGNUM_KS_PW=PW_PLACEHOLDER
```

## 6. Packstack 설치

```
$ packstack --answer-file=answer.txt
```

reference

- <https://www.rdo-project.org/install/packstack/>

# 02. Openstack 기본설정

## 시스템 설정

- 첨부된 절대적인 설정값은 아니고, 현재 구성된 환경에서 문제없이 구동되고 있는 부분을 확인한 환경

### 1. 네트워크 설정

1. admin로그인 후 관리 → 네트워크 → 네트워크 메뉴 진입
2. Public 네트워크 생성 진행 (환경에 따라 네트워크 유형을 Flat이 아니라 VLAN으로 설정해서 사용해도 됨)

#### 네트워크 생성



네트워크 \*

서브넷

서브넷 세부 정보

이름

public

새로운 네트워크를 생성합니다. 또한 네트워크에 연결된 서브넷은 wizard 다음 단계에서 만들 수 있습니다.

프로젝트 \*

services

공급자 네트워크 유형 \* ?

Flat

물리적인 네트워크 \* ?

extnet

☒ 관리 상태 활성화 ?

☐ 공유

☒ 외부 네트워크

☒ 서브넷 생성

가용 구역 힌트 ?

nova

MTU ?

취소

« 뒤로

다음 »

### 3. Private 네트워크 환경

## 네트워크 생성



네트워크 \*

서브넷

서브넷 세부 정보

이름

private

새로운 네트워크를 생성합니다. 또한 네트워크에 연결된 서브넷은 wizard 다음 단계에서 만들 수 있습니다.

프로젝트 \*

services

공급자 네트워크 유형 \* ?

Flat

물리적인 네트워크 \* ?

physnet1

☒ 관리 상태 활성화 ?

☒ 공유

☐ 외부 네트워크

☒ 서브넷 생성

가용 구역 힌트 ?

nova

MTU ?

취소

« 뒤로

다음 »

## 네트워크 생성



네트워크 \*

서브넷

서브넷 세부 정보

서브넷 이름

192.168.20.0

네트워크 주소 ?

192.168.20.0/24

IP 버전

IPv4

게이트웨이 IP ?

192.168.20.13

☐ 게이트웨이 비활성

네트워크에 연결된 서브넷을 생성합니다. 유효한 "네트워크 주소"와 "게이트웨이 IP"를 입력해야 합니다. "게이트웨이 IP"를 입력하지 않을 경우, 네트워크의 첫번째 값이 기본값으로 할당됩니다. 게이트웨이를 사용하지 않는다면, "게이트웨이 비활성화" 체크박스를 선택하십시오. 고급 설정은 "서브넷 상세" 탭을 클릭하여 사용할 수 있습니다.

취소

« 뒤로

다음 »

## 네트워크 생성

네트워크 \*

서브넷

서브넷 세부 정보

☒ DHCP 사용

서브넷에 대한 추가 속성을 명시하세요.

Pools 할당 ?

192.168.20.100,192.168.20.200

DNS 네임 서버 ?

219.250.36.130  
8.8.8.8

호스트 경로 ?

취소

« 뒤로

생성

## 2. 라우터 생성

1. admin로그인 후 관리 → 네트워크 → 라우터 메뉴 진입
2. 라우터 생성 진행

## 라우터 생성

라우터 이름

router

프로젝트 \*

services

☒ 관리 상태 활성화 ?

외부 네트워크

public

☒ SNAT 활성화

가용 구역 힌트 ?

nova

설명:

지정한 매개 변수로 라우터를 생성합니다.

SNAT 활성화는 외부 네트워크가 설정되었을 때만 동작합니다.

취소

라우터 생성

3. 인터페이스 생성 (생성한 라우터 선택 → 인터페이스 메뉴 진입하여 인터페이스 추가 진행)  
서브넷에 private 선택 후 submit (라우터 연동을 위한 특정 사설IP를 설정하려면 IP주소를 입력하면 됨)

### 3. 키페어 생성

1. 프로젝트 → compute → 키 페어 메뉴 진입
2. 공개키 가져오기 선택

공개 키 가져오기

키 페어 이름 \*

ssh1

키 유형 \*

SSH 키

파일에서 공개 키 읽어오기

파일 선택

선택된 파일 없음

공개 키 \*

콘텐츠 크기: 16.00 KB 중 0 바이트

✕ 취소

📁 공개 키 가져오기

3. 공개키는 control서버에 저장된 /root/.ssh/id\_rsa.pub 파일 내용을 붙여넣고 저장

### 4. 이미지 생성

1. 프로젝트 → compute → 이미지 메뉴진입
2. 이미지 생성

## 이미지 상세 정보

메타데이터

## 이미지 상세 정보

이미지 서비스에 업로드할 이미지를 지정합니다.

이미지 이름

rocky

이미지 설명

rocky

## 이미지 소스

파일\*

검색...

rocky.qcow2

포맷\*

QCOW2 - QEMU 에뮬레이터 (Emulator)

## 이미지 요구 사항

커널 (Kernel)

이미지 선택

램디스크 (Ramdisk)

이미지 선택

아키텍처

최소 디스크 (GB)

0

최소 RAM (MB)

0

## 이미지 공유

가시성

사설

공유

커뮤니티

공용

보호됨

예

아니오

✕ 취소

&lt; 뒤로

Next &gt;

✓ 이미지 생성

3. Openstack에서 사용할 이미지는 <https://docs.openstack.org/image-guide/obtain-images.html> 참고하여 이미지 다운로드 수행

## 5. 보안그룹 설정

1. 프로젝트 → 네트워크 → 보안그룹 메뉴 진입
2. default → 규칙관리 메뉴 진입
3. icmp / tcp / udp inbound all allow 정책 수립예제

Direction	Ether Type	IP Protocol	Port Range	Remote IP Prefix	Remote Security Group	Description	Actions
내보냄	IPv4	전체	전체	0.0.0.0/0	-	-	규칙 삭제
내보냄	IPv4	TCP	전체	0.0.0.0/0	-	-	규칙 삭제
들어옴	IPv4	전체	전체	-	default	-	규칙 삭제
들어옴	IPv4	ICMP	전체	0.0.0.0/0	-	-	규칙 삭제
들어옴	IPv4	TCP	전체	0.0.0.0/0	-	-	규칙 삭제
들어옴	IPv4	UDP	전체	0.0.0.0/0	-	-	규칙 삭제

항목 표시

4. default 정책은 inbound deny / outbound allow (Openstack에서 outbound deny가 가능한지는 확인이 필요)

1. node별 호스트정보 추가필요 (대쉬보드에서 콘솔화면 접속시 {{ 호스트네임 }}.localdomain을 찾는 케이스 존재 /etc/hosts에 노드별 호스트네임 정보 추가 (사설IP로 설정, 공인 IP시 iptables 정책으로 인해 정상적으로 작동하지 않음).

```
$ vi /etc/hosts
192.168.20.11 openstackdev-1 openstackdev-1.localdomain
192.168.20.12 openstackdev-2 openstackdev-2.localdomain
```

# 03. Openstack 인스턴스 생성

Openstack 인스턴스 생성 절차 설명

## 인스턴스 생성 방법

- 1. 프로젝트 → compute → 인스턴스 메뉴진입  
인스턴스 시작

세부 정보

소스

Flavor \*

네트워크

네트워크 포트

보안 그룹

Key Pair

구성

서버 그룹

스케줄러 힌트

메타데이터

인스턴스 초기 호스트 이름, 배포할 가용 구역, 인스턴스 수를 입력하십시오. 동일한 설정으로 여러 인스턴스를 생성 하려는 수를 입력하면 됩니다.

Project Name

admin

인스턴스 이름 \*

instance

설명

가용 구역

nova

개수 \*

1

인스턴스 총계  
(20 Max)

10%

1 현재 사용량

1 추가됨

18 기억하기

✕ 취소

< 뒤로

Next >

인스턴스 시작

## 세부 정보

## 소스

Flavor

네트워크

네트워크 포트

보안 그룹

Key Pair

구성

서버 그룹

스케줄러 힌트

메타데이터

인스턴스 소스는 인스턴스를 생성할 때 사용되는 템플릿입니다. 인스턴스의 스냅샷 이미지를 사용할 수 있습니다. (이미지 스냅샷), 볼륨 또는 볼륨스냅샷 (활성화된 경우). 또한 새 볼륨을 생성할 때 영구적인 스토리지를 사용하도록 선택할 수 있습니다.

부팅 소스 선택

Image

새로운 볼륨 생성

예

아니오

볼륨 크기 (GB) \*

20

인스턴스 삭제시 볼륨 삭제

예

아니오

할당됨

1 항목 표시

이름	업데이트 완료	크기	유형	가시성	
CentOS-7-x86_64-GenericCloud-2009	10/6/21 4:46 AM	847.81 MB	QCOW2	공용	↓

1 항목 표시

▼ 사용 가능 2

하나 선택

Q 필터 또는 전체 텍스트 검색은 여기를 클릭하십시오.

2 항목 표시

이름	업데이트 완료	크기	유형	가시성	
centos_modify	10/6/21 3:03 AM	409.27 MB	QCOW2	공용	↑
ubuntu-20.10-server-cloudimg-amd64	10/6/21 4:25 AM	549.44 MB	QCOW2	공용	↑

2 항목 표시

✕ 취소

&lt; 뒤로

Next &gt;

인스턴스 시작

\* 소스에서 볼륨크기는 하단 flavor를 선택시 반영되므로 무시해도 됨.

## 세부 정보

## 소스

Flavor

네트워크

네트워크 포트

보안 그룹

Key Pair

구성

서버 그룹

스케줄러 힌트

메타데이터

Flavor는 인스턴스의 컴퓨터, 메모리 및 스토리지 용량에 대한 크기를 관리합니다.

할당됨

이름	VCPUS	RAM	디스크 총계	Root 디스크	Ephemeral 디스크	공용	
m1.small	1	2 GB	20 GB	20 GB	0 GB	예	↓

▼ 사용 가능 4

하나 선택

Q 필터 또는 전체 텍스트 검색은 여기를 클릭하십시오.

이름	VCPUS	RAM	디스크 총계	Root 디스크	Ephemeral 디스크	공용	
m1.tiny	1	512 MB	1 GB	1 GB	0 GB	예	↑
m1.medium	2	4 GB	40 GB	40 GB	0 GB	예	↑
m1.large	4	8 GB	80 GB	80 GB	0 GB	예	↑
m1.xlarge	8	16 GB	160 GB	160 GB	0 GB	예	↑

✕ 취소

&lt; 뒤로

Next &gt;

인스턴스 시작



세부 정보

소스

Flavor

네트워크

네트워크 포트

보안 그룹

Key Pair

구성

서버 그룹

스케줄러 힌트

메타데이터

네트워크는 클라우드 내 인스턴스에 대한 통신 채널을 제공합니다.

▼ 할당됨 1

아래의 목록에서 네트워크를 선택합니다.

Network	연관된 서브넷	공유	관리자 상태	상태
1 > private	192.168.20.0	예	Up	Active

▼ 사용 가능 0

적어도 하나 이상 네트워크를 선택합니다.

필터 또는 전체 텍스트 검색은 여기를 클릭하십시오.

Network

연관된 서브넷

공유

관리자 상태

상태

사용 가능한 항목 없음

✕ 취소

&lt; 뒤로

Next &gt;

인스턴스 시작



세부 정보

소스

Flavor

네트워크

네트워크 포트

보안 그룹

Key Pair

구성

서버 그룹

스케줄러 힌트

메타데이터

포트는 인스턴스에 추가적인 통신 채널을 제공합니다. 네트워크 대신 포트를 선택 또는 둘 다 선택할 수 있습니다.

▼ 할당됨

아래 목록에서 포트를 선택합니다.

0 항목 표시

이름	IP	관리자 상태	상태
표시할 항목이 없습니다.			

0 항목 표시

▼ 사용 가능 0

Select one or more ports

Q	필터 또는 전체 텍스트 검색은 여기를 클릭하십시오.	✕
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0 항목 표시

이름	IP	관리자 상태	상태
표시할 항목이 없습니다.			

0 항목 표시

✕ 취소

&lt; 뒤로

Next &gt;

인스턴스 시작

세부 정보

소스

Flavor

네트워크

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스케줄러 힌트

메타데이터

인스턴스 작동시 보안 그룹을 선택합니다.

▼ 할당됨 1

1 항목 표시

이름

설명

▶ default

기본 보안 그룹

↓

1 항목 표시

▼ 사용 가능 0

하나 이상 선택

Q

필터 또는 전체 텍스트 검색은 여기를 클릭하십시오.

✕

0 항목 표시

이름

설명

표시할 항목이 없습니다.

0 항목 표시

✕ 취소

&lt; 뒤로

Next &gt;

인스턴스 시작

인스턴스 시작

세부 정보

소스

Flavor

네트워크

네트워크 포트

보안 그룹

Key Pair

구성

서버 그룹

스케줄러 힌트

메타데이터

키 페어는 새롭게 생성한 인스턴스에 SSH를 이용하여 접근할 수 있습니다. 기존 키 페어를 가져오거나 새로운 키 페어를 생성하여 선택할 수 있습니다.

+

키 페어 생성

↓

키 페어 등록

할당됨

1 항목 표시

이름

유형

▶ ssh

ssh

↓

1 항목 표시

▼ 사용 가능 0

하나 선택

Q

필터 또는 전체 텍스트 검색은 여기를 클릭하십시오.

✕

0 항목 표시

이름

유형

표시할 항목이 없습니다.

0 항목 표시

☐ Set admin password

✕ 취소

&lt; 뒤로

Next &gt;

인스턴스 시작

## 인스턴스 생성상태 확인

## 1. 인스턴스 생성상태 확인

1. 프로젝트 → Compute → 인스턴스 메뉴 진입

## 인스턴스

Instance ID = ▾

필터

인스턴스 시작

인스턴스 삭제

기타 작업 ▾

5 항목 표시

<input type="checkbox"/>	Instance Name	Image Name	IP Address	Flavor	Key Pair	Status	Availability Zone	Task	Power State	Age	Actions
<input type="checkbox"/>	client-4	CentOS-7-x86_64-Gen ericCloud-2009	192.168.20.115	m1.small	ssh	Active	nova	None	Running	2분	스냅샷 생성 ▾

## 2. 인스턴스 로그 확인

1. 생성된 인스턴스 이름 선택 후 로그메뉴 진입 (부팅시 기록되는 모든 로그를 확인하려면 모든 로그 확인 버튼 선택)

프로젝트 / Compute / 인스턴스 / client-4

## client-4

스냅샷 생성 ▾

개요

인터페이스

로그

콘솔

액션 로그

## 인스턴스 콘솔 로그

로그 길이

35

시작

모든 로그 확인

```

[[32m OK [0m] Mounted POSIX Message Queue File System.
[[32m OK [0m] Mounted Huge Pages File System.
[[32m OK [0m] Started Journal Service.
[[32m OK [0m] Started Read and set NIS domainname from /etc/sysconfig/network.
[[32m OK [0m] Started Apply Kernel Variables.
[[32m OK [0m] Started Create list of required sta...ce nodes for the current kernel.
[[32m OK [0m] Started Remount Root and Kernel File Systems.
Starting Configure read-only root support...
Starting Rebuild Hardware Database...
Starting Create Static Device Nodes in /dev...
Starting Flush Journal to Persistent Storage...
[ 67.714309] systemd-journald[407]: Received request to flush runtime journal from PID 1
[[32m OK [0m] Started Flush Journal to Persistent Storage.
[[32m OK [0m] Started Create Static Device Nodes in /dev.
[[32m OK [0m] Reached target Local File Systems (Pre).
Starting udev Kernel Device Manager...
[[32m OK [0m] Started Configure read-only root support.
Starting Load/Save Random Seed...
[[32m OK [0m] Reached target Local File Systems.
Starting Migrate local SELinux poli...structure to the new structure...
Starting Import network configuration from initramfs...
Starting Preprocess NFS configuration...
Starting Rebuild Journal Catalog...
[[32m OK [0m] Started Load/Save Random Seed.
[[32m OK [0m] Started Setup Virtual Console.
[[32m OK [0m] Started Preprocess NFS configuration.
[[32m OK [0m] Started Rebuild Journal Catalog.
[[32m OK [0m] Started udev Kernel Device Manager.
[[32m OK [0m] Started Migrate local SELinux polic... structure to the new structure.
[[32m OK [0m] Started Import network configuration from initramfs.
Starting Create Volatile Files and Directories...
[[32m OK [0m] Started Create Volatile Files and Directories.
Starting Security Auditing Service...
[ 84.819795] type=1305 audit(1633595007.082:4): audit_pid=475 old=0 auid=4294967295 ses=4294967295 subj=system_u:system_r:auditd_t:s0 res=1

```

# 04. Openstack cli 사용

## keystone 연동

```
[root@openstackdev-1 ~]# . ~/keystonerc_admin
[root@openstackdev-1 ~(keystone_admin)]#
```

## 이미지 생성방법

```
~(keystone_admin)]# openstack image create \
--disk-format qcow2 \
--file CentOS-7-x86_64-GenericCloud-2009.qcow2 \
--public \
Centos7-2009
```

파일명이 CentOS-7-x86\_64-GenericCloud-2009.qcow2 이미지를 qcow2 포맷으로 적용하고, 이미지 이름은 Centos7-2009, 공용으로 설정

## 인스턴스 관리

### 1. 인스턴스 생성

```
~(keystone_admin)]# openstack server create \
--flavor m1.small \
--image Centos7-2009 \
--network private \
--boot-from-volume 30 \
--key-name ssh \
--wait \
--max 5 \
client
```

인스턴스 flavor를 m1.small 으로하고, 이미지이름은 Centos7-2009, 네트워크는 private으로 설정, 디스크는 30G으로 client-{n}으로 5개 동시 생성

### 2. 실행중인 인스턴스 리스트 확인

```
~(keystone_admin)]# openstack server list --all-projects
```

ID	Name	Status	Networks	Image	Flavor
3d728b9b-7c87-4369-8036-ab143af9eb31	client-2	ACTIVE	private=192.168.20.177	N/A (booted from volume)	m1.small
5427d961-2b6b-4804-85df-c275eddf8e2d	client-3	ACTIVE	private=192.168.20.109	N/A (booted from volume)	m1.small
ab7ea5fa-133f-4e10-b5fa-874c4f943720	client-4	ACTIVE	private=192.168.20.115	N/A (booted from volume)	m1.small
cc0974ed-187a-4a19-8a6a-484d477b83c1	client-1	ACTIVE	private=192.168.20.122	N/A (booted from volume)	m1.small
a7e51fdd-cecb-436f-9224-8d1e5d02be28	ubuntu_sample	ACTIVE	private=192.168.20.125	N/A (booted from volume)	m1.small

### 3. 인스턴스 삭제 (다중 인스턴스 삭제시 한칸씩 띄우면 됨)

```
~(keystone_admin)]# openstack server delete client-1 client-2
```

# Linux에서 VMWARE Player설치 에러 해결하기

Linux에서 VMWARE Workstation player설치가 안되는 경우

## 1. VMware 패키지 설치 후 셋업과정중에 에러 발생.

```
...
tmp/modconfig-gUoIPj/vmnet-only/netif.c:353:4: error: implicit declaration of function 'netif_rx_ni'; did you mean 'netif_rx'? [-Werror=implicit-function-declaration]
353 |   netif_rx_ni(skb);
    |   ^~~~~~
    |   netif_rx
/tmp/modconfig-gUoIPj/vmnet-only/bridge.c: In function 'VNetBridgeReceiveFromVNet':
/tmp/modconfig-gUoIPj/vmnet-only/bridge.c:688:10: error: implicit declaration of function 'netif_rx_ni'; did you mean 'netif_rx'? [-Werror=implicit-function-declaration]
688 |     netif_rx_ni(clone);
    |     ^~~~~~
    |     netif_rx
cc1: some warnings being treated as errors
make[2]: *** [scripts/Makefile.build:295: /tmp/modconfig-gUoIPj/vmnet-only/netif.o] 오류 1
make[2]: *** 끝나지 않은 작업을 기다리고 있습니다....
cc1: some warnings being treated as errors
make[2]: *** [scripts/Makefile.build:295: /tmp/modconfig-gUoIPj/vmnet-only/bridge.o] 오류 1
```

## 2. 원인

1. VMware와 커널모듈 호환성에 오류가 있는듯 하다.

## 3. 조치방법

```
$> wget https://github.com/mkubeczek/vmware-host-modules/archive/workstation-17.0.2.tar.gz
$> tar -xzf workstation-17.0.2.tar.gz
$> cd vmware-host-modules-workstation-17.0.2
$> tar -cf vmmon.tar vmmon-only
$> tar -cf vmnet.tar vmnet-only
$> cp -v vmmon.tar vmnet.tar /usr/lib/vmware/modules/source/
$> vmware-modconfig --console --install-all
...
Starting VMware services:
Virtual machine monitor           done
Virtual machine communication interface done
VM communication interface socket family done
Virtual ethernet                 done
VMware Authentication Daemon      done
Shared Memory Available           done
```

## Reference

\* <https://github.com/mkubeczek/vmware-host-modules/blob/w17.0.2/INSTALL>

# xenserver gpt disallow

```
$> vi /opt/xensource/installer/constants.py
...
GPT_SUPPORT=False
$> exit
```

# xenserver localdisk 리포지터리 구성

sda3번 파티션을 iso 리포지터리로 구성

```
$> xe sr-create name-label="VM-ISO" type=iso device-config:location=/data/iso device-config:legacy_mode=true content-type=iso
```

sda4번 파티션을 OS리포지터리로 구성

\*구성할때는 반드시 빈 파티션이어야 함.

```
$> xe sr-create content-type=user device-config:device=/dev/sda4 name-label="VM-OS" shared=false type=ext
```