Install

Install OpenStack
```
$ sudo snap install openstack
$ sunbeam prepare-node-script | bash -x && newgrp snap_daemon
$ sunbeam cluster bootstrap --accept-defaults
$ sunbeam configure --accept-defaults --openrc demo-openrc
```

Launch test instance
```
$ sunbeam launch ubuntu -n test
```

Interact

Obtain OpenStack dashboard URL
```
$ sunbeam dashboard-url
```

Generate admin RC file
```
$ sunbeam openrc > admin_openrc
```

Source RC file
```
source <file path>
```

List OpenStack services
```
openstack catalog list
```

Domains

List domains
```
openstack domain list
```

Show domain details
```
openstack domain show <domain ID>
```

Create domain
```
openstack domain create <domain name>
```

Update domain
```
openstack domain set <key> <value> <domain ID>
```

Update domain
```
openstack domain set <key> <value> <domain ID>
```

Users

List users
```
openstack user list
```

Show user details
```
openstack user show <user ID>
```

Create user
```
openstack user create --password <password> <user name>
```

Update user
```
openstack user set <key> <value> <user ID>
```

Set user password
```
openstack user password set
```

Delete user
```
openstack user delete <user ID>
```

Groups

List groups
```
openstack group list
```

Show group details
```
openstack group show <group ID>
```

Create group
```
openstack group create <group name>
```

Update group
```
openstack group set <key> <value> <group ID>
```

Add user to group
```
openstack group add user <group ID> <user ID>
```

Remove user from
```
openstack group remove user <group ID> <user ID>
```

Delete group
```
openstack group delete <group ID>
```

Projects

List projects
```
openstack project list
```

Show project details
```
openstack project show <project ID>
```

Create project
```
openstack project create <project name>
```

Update project
```
openstack project set <key> <value> <project ID>
```

Delete project
```
openstack project delete <project ID>
```

Roles

Assign role on project
```
openstack role add --project <project ID> [--user <user ID> | --group <group ID>] <role name>
```

Remove role on project
```
openstack role remove --project <project ID> [--user <user ID> | --group <group ID>] <role name>
```

Images

List images
```
openstack image list
```

Show image details
```
openstack image show <image ID>
```

Create image
```
openstack image create --disk-format qcow2 --file <file path> <image name>
```

Update image
```
openstack image set <key> <value> <image ID>
```

Delete image
```
openstack image delete <image ID>
```

Flavors

List flavors
```
openstack flavor list
```

Show flavor details
```
openstack flavor show <flavor name>
```

Create flavor
```
openstack flavor create --vcpus <vCPUs> --ram <RAM [MB]>
--disk <Disk [GB]> <flavor name>
```

Update flavor
```
openstack flavor set <key> <value> <flavor name>
```

Delete flavor
```
openstack flavor delete <flavor name>
```

Networks

List networks
```
openstack network list
```

Show network details
```
openstack network show <network ID>
```

Create network
```
openstack network create <network name>
```

Update network
```
openstack network set <key> <value> <network ID>
```

Delete network
```
openstack network delete <network ID>
```

Subnets

List subnets
```
openstack subnet list
```

Show subnet details
```
openstack subnet show <subnet ID>
```

Create subnet
```
openstack subnet create --network <network ID>
--subnet-range <subnet CIDR> <subnet name>
```

Update subnet
```
openstack subnet set <key> <value> <subnet ID>
```

Delete subnet
```
openstack subnet delete <subnet ID>
```

Routers

List routers
```
openstack router list
```

Show router details
```
openstack router show <router ID>
```

Create router
```
openstack router create <router name>
```

Update router
```
openstack router set <key> <value> <router ID>
```

Attach subnet to router
```
openstack router add subnet <router ID> <subnet ID>
```

Detach subnet from router
```
openstack router remove subnet <router ID> <subnet ID>
```

Delete router
```
openstack router delete <router ID>
```

Security groups

List security groups
```
openstack security group list
```

Show security group details
```
openstack security group show <security group ID>
```

Create security group
```
openstack security group create <security group name>
```

Update security group
```
openstack security group set <key> <value> <security
group ID>
```

List rules in the security group
```
openstack security group rule list <security group ID>
```

Add rule to the security group
```
openstack security group rule create <key> <value> ...
<security group ID>
```

Delete rule from the security group
```
openstack security group rule delete <rule ID>
```

Delete security group
```
openstack security group delete <security group ID>
```

Key pairs

List key pairs
```
openstack keypair list
```

Show key pair details
```
openstack keypair show <key pair name>
```

Create kay pair
```
openstack keypair create --private-key <file path> <key
pair name>
```

Delete key pair
```
openstack keypair delete <key pair name>
```

Instances

List instances
```
openstack server list
```

Show instance details
```
openstack server show <instance name>
```

Create instance
```
openstack server create --flavor <flavor name> --image
<image ID> --network <network ID> --key-name <key pair
name> <instance name>
```

Update instance
```
openstack server set <key> <value> <instance ID>
```

Delete instance
```
openstack server delete <instance ID>
```

Floating IPs

List floating IPs
```
openstack floating ip list
```

Create floating IP
```
openstack floating ip create <network ID>
```

Attach floating IP to instance
```
openstack server add floating ip <instance ID> <floating
IP ID>
```

Detach floating IP from instance
```
openstack server remove floating ip <instance ID>
<floating IP ID>
```

Delete floating IP
```
openstack floating ip delete <floating IP ID>
```

Volumes

List volumes
```
openstack volume list
```

Show volume details
```
openstack volume show <volume ID>
```

Create volume
```
openstack volume create --size <size [GB]> <volume
name>
```

Update volume
```
openstack volume set <key> <value> <volume ID>
```

Attach the volume to the instance
```
openstack server add volume <instance ID> <volume ID>
```

Detach the volume from the instance
```
openstack server remove volume <instance ID> <volume ID>
```

Delete volume
```
openstack volume delete <volume ID>
```

Quotas

List default quotas
```
openstack quota show --default
```

Update default quotas
```
openstack quota set <key> <value> --class default
```

List project quotas
```
openstack quota show <project ID>
```

Update project quotas
```
openstack quota set <key> <value> <project ID>
```

Teardown

Stop OpenStack
```
sudo snap stop openstack
```

Start OpenStack
```
sudo snap start openstack
```

Disable OpenStack
```
sudo snap disable openstack
```

Enable OpenStack
```
sudo snap enable openstack
```

Uninstall OpenStack
```
sudo snap remove --purge openstack
```

Ubuntu Pro

Attach [Ubuntu Pro subscription](#)
```
sunbeam enable pro --token <token>
```

Detach Ubuntu Pro subscription
```
sunbeam disable pro
```