LXD

[lxd]

install

```
sudo add-apt-repository --yes ppa:ubuntu-lxc/lxd-stable
sudo apt update
sudo apt install lxd

# create zfs dataset on pool rpool
zfs create rpool/lxd

# create lxd storage called zfspool using previous defined dataset
lxc storage create zfspool zfs source=rpool/lxd

# define default storage pool
lxc profile device add default root disk path=/ pool=zfspool

# initialize network
sudo lxd init
```

Because group membership is only applied at login, you then either need to close and re-open your user session or use the “newgrp lxd” command in the shell you're going to interact with lxd from

```
newgrp lxd
```

lxc-prepare (chmod +x)

```
#!/bin/bash

NAME=$1
ALIAS=$2
ALIAS=${ALIAS:=xenial}

lxc image show $ALIAS >/dev/null 2>&1
if [ ! $? = 0 ]; then
    echo lxc image copy images:ubuntu/xenial/amd64 local: --alias
xenial
    exit 0
fi

if [ ! -f /etc/apt/apt.conf.d/proxy.conf ]; then
    sudo apt install apt-cacher-ng
    PROXY=$( lxc network show lxdbr0 | sed -n 's/\s\+ipv4.address:
\([0-9\.]\+\).*/\1/p' )
    echo "Acquire::http::Proxy \"http://$PROXY:3142\";" | sudo tee
/etc/apt/apt.conf.d/proxy.conf
```

```
    echo "PfilePattern = .*" | sudo tee -a /etc/apt-cacher-ng/acng.conf
    echo "PassThroughPattern: .*" | sudo tee -a /etc/apt-cacher-
ng/acng.conf
    systemctl restart apt-cacher-ng
fi


lxc info $NAME >/dev/null 2>&1
if [ ! $? = 0 ]; then
    lxc launch $ALIAS $NAME
fi


if [ -f /etc/apt/apt.conf.d/proxy.conf ]; then
    lxc file push /etc/apt/apt.conf.d/proxy.conf
$NAME/etc/apt/apt.conf.d/
fi

lxc file push /etc/inputrc $NAME/etc/
```

basic

list remote images

```
lxc image list images:
```

auto update remote images

```
lxc config set images.auto_update_cached true
```

import image

```
lxc image copy images:ubuntu/xenial/amd64 local: --alias xenial
```

create profile

```
lxc profile create juju-default
cat profile.yaml | lxc profile edit juju-default
```

profile.yaml

```
name: juju-default
config:
  boot.autostart: "true"
  security.nesting: "true"
  security.privileged: "true"
  linux.kernel_modules: openvswitch,nbd,ip_tables,ip6_tables
```

```
devices:
  eth0:
    mtu: "9000"
    name: eth0
    nictype: bridged
    parent: br-mng
    type: nic
  kvm:
    path: /dev/kvm
    type: unix-char
  mem:
    path: /dev/mem
    type: unix-char
  root:
    path: /
    type: disk
  tun:
    path: /dev/net/tun
    type: unix-char
```

create container from local image

```
lxc image list
lxc launch xenial test1 --profile juju-default
```

create container from remote image

```
lxc launch images:ubuntu/xenial/amd64 xenial1
lxc config set xenial1 boot.autostart false
lxc list
```

bash inside

```
lxc exec trusty1 -- /bin/bash
```

stop and delete

```
lxc stop trusty1
lxc delete trusty1
```

autostart on host boot

```
lxc config set <name> boot.autostart true
```

show container configuration

```
lxc config show <name>
```

proxy

```
apt install apt-cacher-ng
NAME=x11test
lxc file push /etc/apt/apt.conf.d/proxy.conf $NAME/etc/apt/apt.conf.d/
```

/etc/apt/apt.conf.d/proxy

```
Acquire::http::Proxy "http://10.106.191.1:3142";
```

servers

prepare lxd server

```
# bind to port 8443
lxc config set core.https_address "[::]"

# password
lxc config set core.trust_password some-password
```

from client add remote server

```
lxc remote add myserver <ip address or DNS>
```

run command

```
lxc exec myserver:trusty1 -- bash
```

xorg integration

- https://bitsandslices.wordpress.com/2015/12/08/creating-an-lxd-container-for-graphics-applications/

container

create container

```
NAME=x11test
lxc launch images:ubuntu/xenial/amd64 $NAME
```

install simpler X program

```
lxc exec $NAME -- apt install xterm
```

set DISPLAY env to xorg server on host

```
lxc config set x11test environment.DISPLAY <ip-of-host-lxdbr0-bridge>:0
```

on host

for gmd (ubuntu >= 17.10) or ...

/etc/gdm3/custom.conf

```
[security]
DisallowTCP=false

[xdmcp]
Enable=true
```

... or for lightdm

/etc/lightdm/lightdm.conf

```
xserver-allow-tcp=true
xserver-command=X -listen tcp
```

add ip of container on /etc/X0.hosts

```
NAME=x11test
lxc info $NAME | sed -n "s/\s*eth0:\s*inet\s\([0-9\.]*\).*/\1/p" >>
/etc/X0.hosts
```

launch X application in container

```
xhost +
lxc exec $NAME -- xterm
```

audio integration

- https://bitsandslices.wordpress.com/2015/12/10/using-audio-in-lxd-containers/

misc devices

```
lxc config device add <name> rfxcom unix-char path=/dev/ttyACM0
lxc config device set <name>  rfxcom  mode 666
```

share folder

```
# only first time
echo "root:$UID:1" | sudo tee -a /etc/subuid
echo "root:$GID:1" | sudo tee -a /etc/subgid

# for every share
# lxc init stretch giano
lxc config set giano raw.idmap "both $UID $UID"
# source is on host, path is inside container
lxc config device add giano develop disk source=/mnt/giano path=/mnt/giano
```

migration

on host-destination

```
lxc config set core.https_address 0.0.0.0:8443
lxc config set core.trust_password PASSWORDhere
```

on host-origin

```
# add destination lxd
lxc remote add other-server <ip-address>

# take snap0 on gianocop container
lxc snapshot gianocop snap0
lxc copy gianocop/snap0 other-server:gianocop --verbose
lxc delete gianocop/snap0
```