



This article is a work in progress. Information here is probably incomplete or inaccurate.

## LXD

LXD is a system container and virtual machine management tools primarily targeted for Linux machines. Similar in concept to [docker](#), unlike docker it is *vastly* easier to manage and much more sane in scope.

list of features include:

- Sane cli utility for container management.
- Containers are rootless *by default* <sup>1)</sup>.
- Easily send/receive files from a container.
- Decently rich set of publicly-available images (the important ones being alpine/ubuntu/void).
- Tool for creating your own images locally without any friction.
- Storage pools with ceph/zfs/btrfs

## Basic Usage

Containers with LXD are managed by the cli utility `lxc` <sup>2)</sup>

```
echo "hi"
```

## LXD sane build from source

Long story short the [official docs](#) on the LXD source install are quite terrible. It doesnt actually spit out normal libs and binaries, rather it uses go's ugly `install` subcommand that really sucks for anything other than small cli utilities.

This guide aims to build & install LXD on any system. This guide also assumes that you have a recent version of go installed, if you dont go install that too.

**NOTE:** you should also have [lxc \(the lib\)](#) installed

The build has 3 parts:

- raft
- dqlite
- LXD

We will be building each dependency in this order.

## raft

Start by installing the latest release archive from the [releases](#) page.

```
wget -O raft-1.17.1.tar.gz
"https://github.com/canonical/raft/archive/refs/tags/v1.17.1.tar.gz"
tar -xvf raft-1.17.1.tar.gz
cd raft-1.17.1
```

Now for configure/build (typical autotools bullshitery)

```
autoreconf -i
./configure --prefix=/usr
make
```

Finally the install

```
sudo make install
```

## dqlite

Start by installing the latest release archive from the [releases](#) page.

```
wget -O dqlite-1.14.0.tar.gz
"https://github.com/canonical/dqlite/archive/refs/tags/v1.14.0.tar.gz"
tar -xvf dqlite-1.14.0.tar.gz
cd dqlite-1.14.0
```

Now for configure/build (again the typical autotools bullshitery)

```
autoreconf -i
./configure --prefix=/usr
make
```

Finally slap it into your prefix

```
sudo make install
```

## LXD

Now that we have all of the required dependencies installed we can get to building LXD. Start by getting the latest release tarball from the [downloads](#) page.

```
# this is for version 5.13 but should literally be whatever is the latest
wget "https://linuxcontainers.org/downloads/lxd/lxd-5.13.tar.gz"
```

```
tar -xvf lxd-5.13.tar.gz
cd lxd-5.13
```

Next configure both go and cgo initial flags.

```
export GOFLAGS="-buildmode=pie -trimpath"
export CGO_LDFLAGS_ALLOW="-Wl,-z,now"
```

```
CGO_LDFLAGS="-static" go build -v -tags "agent" -o bin/ ./lxd-agent/...

go build -v -tags "netgo" -o bin/ ./lxd-migrate/...
for tool in fluidshift lxc lxc-to-lxd lxd lxd-benchmark lxd-user; do
  go build -v -tags "libsqlite3" -o bin/ ./$tool/...
done
```

And now for the really painful part, installing everything, first lets get all the basic things where they need to be

```
for tool in fluidshift lxc lxc-to-lxd lxd lxd-agent lxd-benchmark lxd-migrate
lxd-user; do
  sudo install -v -p -Dm755 "bin/$tool" "/usr/bin/$tool"
done
```

Now most people are gonna run systemd on their prod machines, so this guide *assumes* that. If you in particular dont, you are *certainly* smart enough to figure out porting this you your preferred init.

create the following files:

- /usr/lib/systemd/system/lxd.service

### [lxd.service](#)

```
[Unit]
Description=LXD Container Hypervisor
After=network-online.target lxcfs.service
Requires=network-online.target lxcfs.service lxd.socket
Documentation=man:lxd(1)

[Service]
Environment=LXD_OVMF_PATH=/usr/share/ovmf/x64
ExecStart=/usr/bin/lxd --group=lxd --logfile=/var/log/lxd/lxd.log
ExecStartPost=/usr/bin/lxd waitready --timeout=600
ExecStop=/usr/bin/lxd shutdown
TimeoutStartSec=600s
TimeoutStopSec=30s
Restart=on-failure
LimitNOFILE=1048576
LimitNPROC=infinity
LimitCORE=infinity
TasksMax=infinity
Delegate=yes
```

```
KillMode=process  
  
[Install]  
WantedBy=multi-user.target
```

- /usr/lib/systemd/system/lxd.socket

### [lxd.socket](#)

```
[Unit]  
Description=LXD - unix socket  
Documentation=man:lxd(1)  
  
[Socket]  
ListenStream=/var/lib/lxd/unix.socket  
SocketMode=0660  
SocketGroup=lxd  
Service=lxd.service  
  
[Install]  
WantedBy=sockets.target
```

- /usr/lib/sysusers.d/lxd.conf

### [lxd.conf](#)

```
g lxd - -
```

### Log dir

```
install -v -dm700 "/var/log/lxd"
```

Some extra bash completions

```
sudo install -v -p -Dm644 "scripts/bash/lxd-client" /usr/share/bash-completion/completions/lxd
```

## Notes for Debian 12 Machines

You may need to re-install the following packages:

```
libacl1-dev  
libuv1-dev  
libcap-dev  
ibudev-dev
```

1)

as they should be

2)

dont confuse this with lxc, as that is the low-level tooling that lxd itself utilizes for its functionality.

From:

<https://memex.kyaruc.moe/> - **kyaruc memex**

Permanent link:

<https://memex.kyaruc.moe/lxd>

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