Getting started with LXD
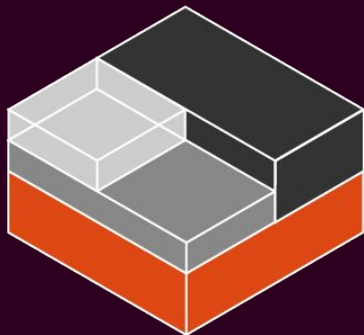
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System containers

➜ The oldest type of containers
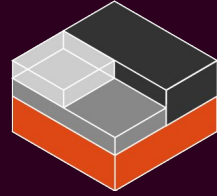*BSD jails, Linux vServer, Solaris Zones, OpenVZ, LXC and LXD.*

➜ Behave like standalone systems
No need for specialized software or custom images.

➜ No virtualization overhead
They are containers after all.

LXD: the container lighter-visor

What it **IS**

➜ Simple
Clean command line interface, simple REST API and clear terminology.

➜ Fast
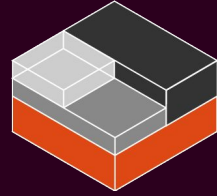*No virtualization overhead so as fast as bare metal.*

➜ Secure
Safe by default. Combines all available kernel security features.

➜ Scalable
From a single container on a developer's laptop to thousands of containers per node in a datacenter.

LXD: the container lighter-visor

➔ Another virtualization technology
  LXD tries to offer as similar a user experience as that of a virtual machine but it doesn't itself virtualize anything, you always get access to the real hardware and the real native performance.
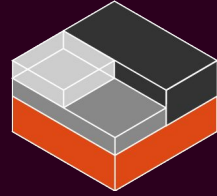
➔ A fork of LXC
  LXD uses LXC's API to manage the containers behind the scene.

➔ Another application container manager
  LXD only cares about full system containers and doesn't care about what runs inside the container.

LXD: the container lighter-visor

What it **IS**

nova-compute-lxd	command line tool	your own client/script ?

LXD REST API

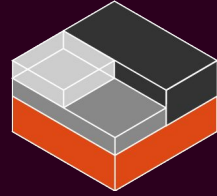| Host A	Host B	Host C	Host D	Host ...
LXD	**LXD**	**LXD**	**LXD**	**LXD**
LXC	**LXC**	**LXC**	**LXC**	**LXC**
Linux kernel	**Linux kernel**	**Linux kernel**	**Linux kernel**	**Linux kernel**

LXD: the container lighter-visor

Main components

➔ Containers
   The containers themselves, their configuration, devices and snapshots.

➔ Images
   The source of all containers.

➔ Profiles
   A convenient way to share configuration with multiple containers.

➔ Networks (LXD 2.3+)
   Creation and management of bridges, tunnels and DHCP/DNS options.

➔ Storage pools and volumes (LXD 2.9+)
   Container and image storage as well as custom storage volumes.

➔ Clustering (LXD 3.0+)
   Create and manage a virtual giant LXD instance.

LXD: the container lighter-visor
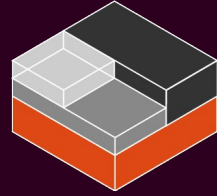
Clustering

➔ **Built-in clustering support**
No external dependencies, all LXD 3.0 or higher installations can be instantly turned into a cluster.
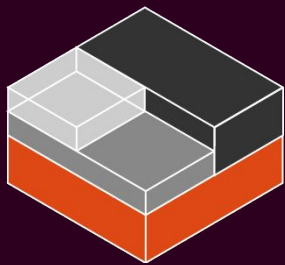
➔ **Same API as a single node**
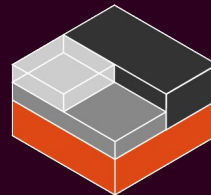*Clients that aren't clustering aware just see it as a very large LXD instance.*

➔ **Scales to thousands of containers on dozens of nodes**
Uses a built-in distributed database and cross-connections between the nodes to offer a consistent view to clients and load-balance containers.
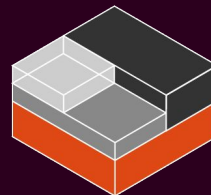
Demo time!

LXD: the container lighter-visor

Daily images

- ➔ Alpine
- ➔ ArchLinux
- ➔ CentOS
- ➔ Debian
- ➔ Fedora
- ➔ Gentoo
- ➔ OpenSUSE
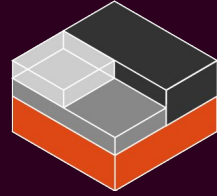- ➔ Oracle
- ➔ Plamo
- ➔ Sabayon
- ➔ Ubuntu

LXD: the container lighter-visor

LXD is available on

- ➔ Alpine Linux
- ➔ Arch Linux
- ➔ CentOS
- ➔ Debian
- ➔ Elementary
- ➔ Fedora
- ➔ Gentoo
- ➔ OpenSUSE
- ➔ Manjaro
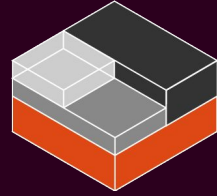- ➔ Solus
- ➔ Ubuntu

LXD: the container lighter-visor

LXD itself

➔ Written in Go

➔ Fully translatable

➔ API client in Go and python

➔ Apache2 licensed

➔ No CLA

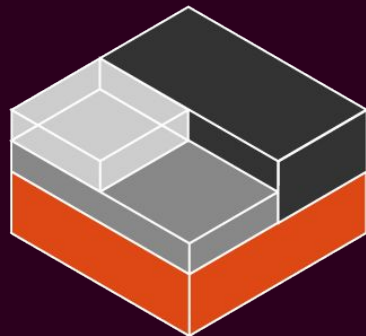git clone https://github.com/lxc/lxd

LXD: the container lighter-visor

➔ Runs system containers created from images
➔ Safe by default (unprivileged containers)
➔ Similar resource control as virtual machines
➔ Support for device passthrough
➔ Extremely low overhead (typically identical to metal)
➔ Low level access to any devices supported by Linux
➔ Simple REST API with language bindings
➔ Clustering support
➔ Production ready

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https://linuxcontainers.org/lxd
https://github.com/lxc/lxd

Questions?

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Now it's your turn!