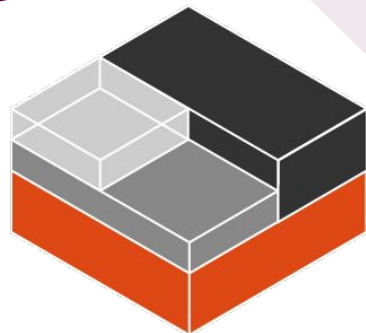


Introduction to LXD

System containers at any scale



Stéphane Graber
LXD project leader

@stgraber
<https://stgraber.org>
stephane.graber@canonical.com

CANONICAL  ubuntu 

What are containers?



01

OS level virtualization

Shared kernel but different view of system resources.

02

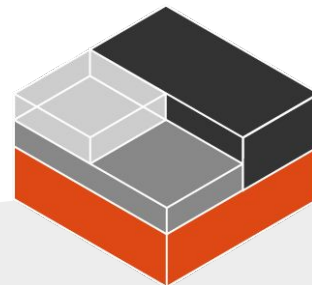
Baremetal performance, no virtualization overhead

No fake BIOS, fake hardware, ... only real drivers on real hardware.

03

Various different types on Linux

Application containers, system containers, embedded containers.



What are system containers?



01

They are the oldest type of containers

BSD jails, Linux vServer, Solaris Zones, OpenVZ, LXC and LXD.

02

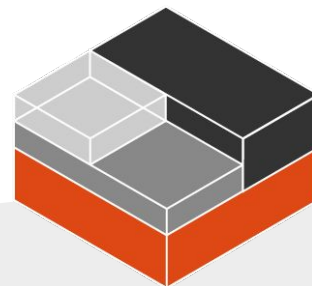
They behave like standalone systems

No need for specialized software or custom images.

03

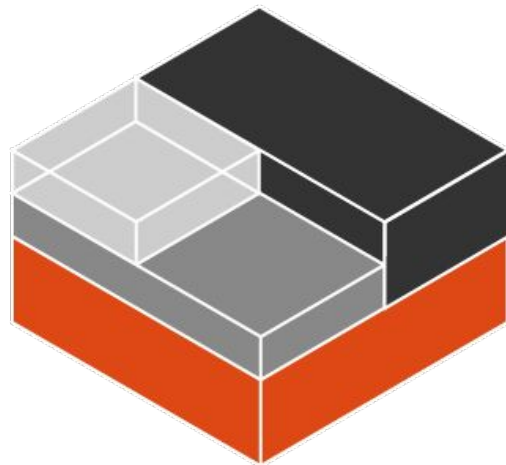
Low overhead, easy management

Thousands can be run on one system, as easy to manage as a bunch of processes.



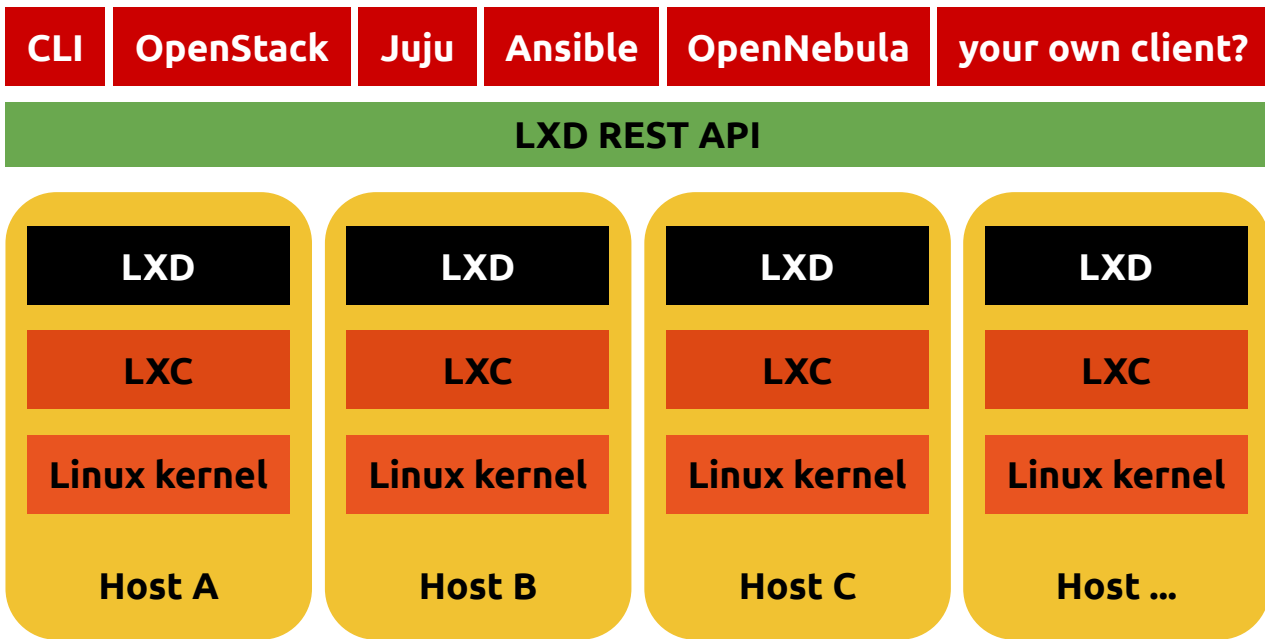
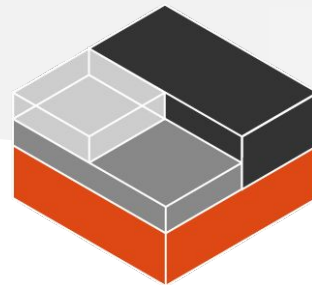


Demo time!



LXD

System
container
manager



What LXD is



01

Simple

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

02

Fast

Image based, no virtualization, direct hardware access.

03

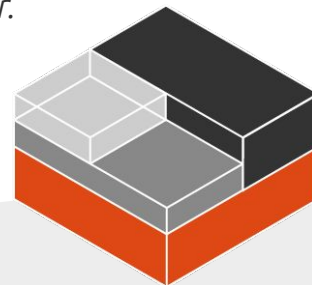
Secure

Safe by default. Combines all available kernel security features.

04

Scalable

From a single container on a laptop to tens of thousands of containers in a cluster.



What LXD isn't



01

Another virtualization technology

LXD offers an experience very similar to a virtual machine.

But it's still containers, with no virtualization overhead and real hardware.

02

A fork of LXC

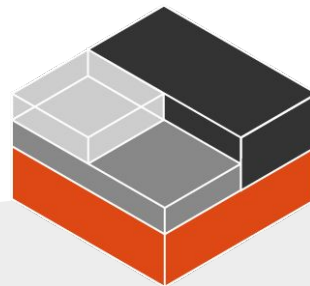
LXD uses LXC's API to manage the containers behind the scene.

03

Another application container manager

LXD only cares about full system containers.

You can run whatever you want inside a LXD container, including Docker.



Chromebooks



Installing Linux...

This process may take a few minutes. Starting the Linux container.

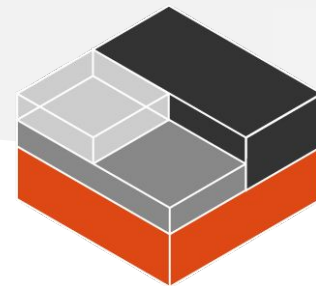


Cancel



LXD

Main components



Certificates

Cluster

Containers

Snapshots

Backups

Events

Images

Aliases

Networks

Operations

Projects

Storage pools

Storage volumes

Snapshots

LXD clustering



01

Built-in clustering support

No external dependencies, all LXD 3.0 or higher installations can be instantly turned into a cluster.

02

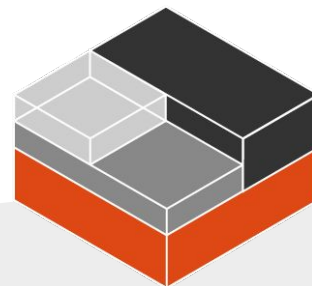
Same API as a single node

Clients that aren't clustering aware just see it as a very large LXD instance.

03

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.

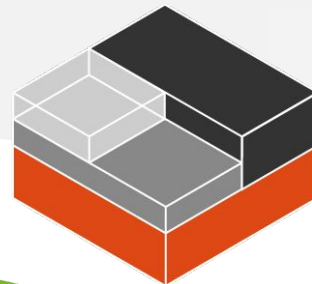


Wide
selection of
images

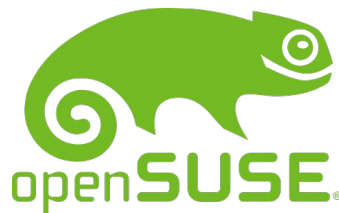
Updated daily



alpine
Linux



fedora



ubuntu



ORACLE®



CentOS



gentoo linux™

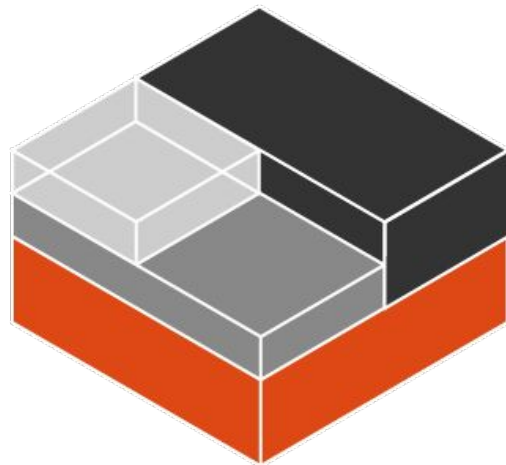


debian





Demo time!



Let's recap



01

System containers as alternative to virtual machines

*Very similar workflow to virtual machines or cloud instances.
Without overhead, with direct hardware access and no need for virtualization support.*

02

Large scale management with clustering

*Single entity to manage, highly available and easily scalable.
Combined with CEPH, allows for fault tolerance.*

03

Direct hardware access

No virtualized hardware, directly pass your devices to your containers.

04

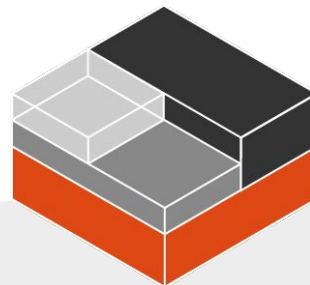
Safe and fast

State of the art container security and isolation.

05

Production ready

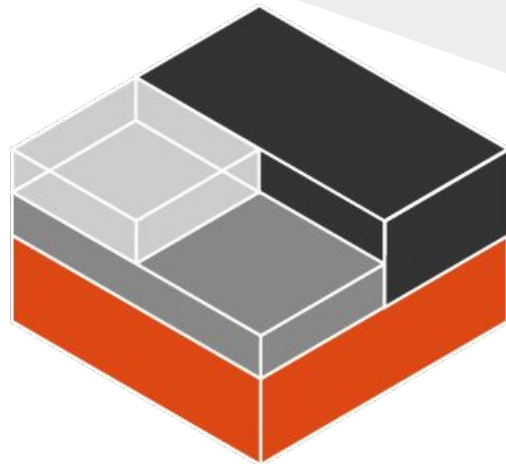
*Long term support releases with 5 years of support.
LXD has been around for over 4 years, LXC for over a decade.*





Questions ?

Website: <https://linuxcontainers.org/lxd>
Code: <https://github.com/lxc/lxd>
Online demo: <https://linuxcontainers.org/lxd/try-it>



We have stickers, come
get them in front!

Stéphane Graber

LXD project leader

@stgraber

<https://stgraber.org>

stephane.graber@canonical.com