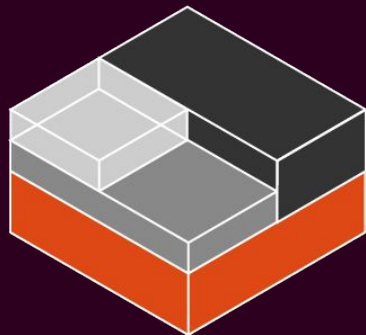


Resource limitations for your containers

ContainerCon 2016
Toronto, Canada

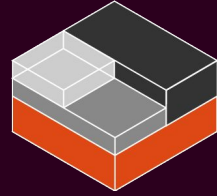


Stéphane Graber
LXD project leader, Canonical Ltd.

stgraber@ubuntu.com
<https://www.stgraber.org>

@stgraber

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.

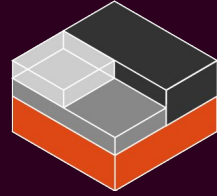
→ Secure

Safe by default. Combines all available kernel security features.

→ Scalable

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

LXD: the container lighter-visor



What it IS

nova-lxd

command line tool

your own client/script ?

LXD REST API

LXD

LXC

Linux kernel

Host A

LXD

LXC

Linux kernel

Host B

LXD

LXC

Linux kernel

Host C

LXD

LXC

Linux kernel

Host D

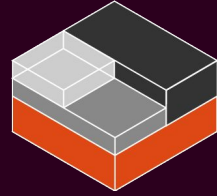
LXD

LXC

Linux kernel

Host ...

LXD: the container lighter-visor



What it **ISN'T**

→ 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.

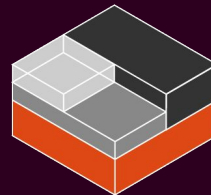
→ A fork of LXC

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

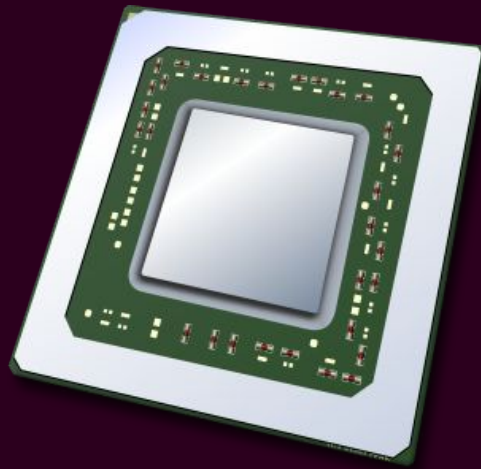
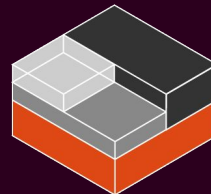


Resource limits in LXD

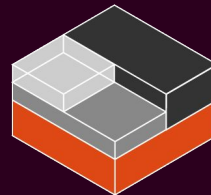
- CPU
- Memory
- Disk
- Network
- Kernel resources

LXD: the container lighter-visor

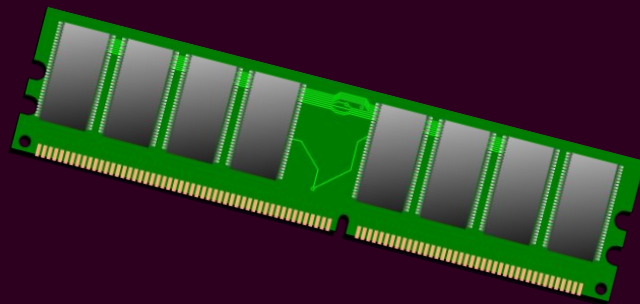
CPU limits



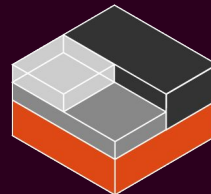
LXD: the container lighter-visor



Memory limits



LXD: the container lighter-visor



Disk I/O and space

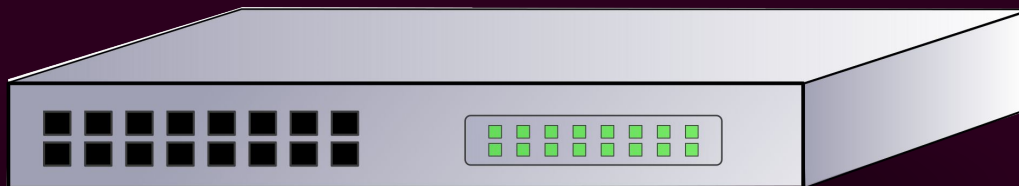
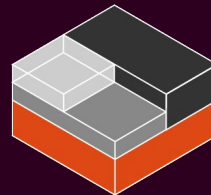


Hard Disk

Created by Andrew Fitzsimon

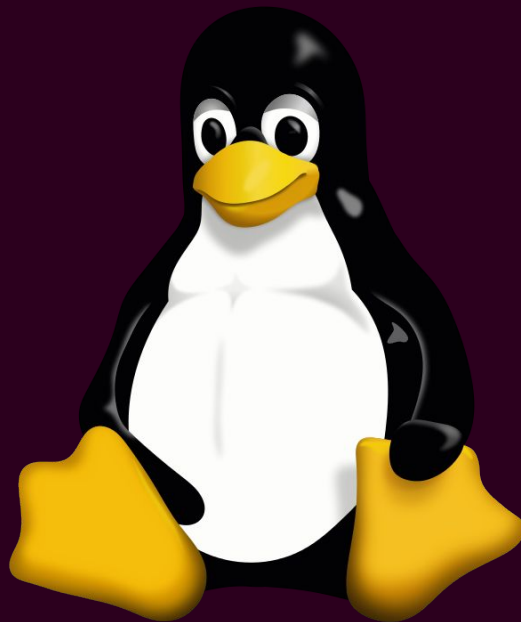
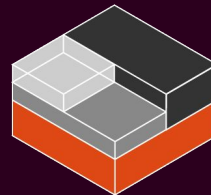
LXD: the container lighter-visor

Network I/O

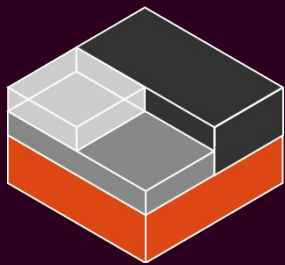


LXD: the container lighter-visor

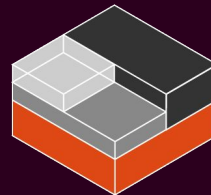
Kernel resources



Demo time!



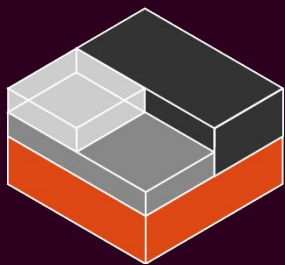
LXD: the container lighter-visor



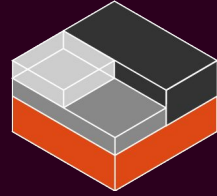
Device passthrough

- Network interfaces
- Disks and directories
- Unix character devices
- Unix block devices
- USB devices

More demo!



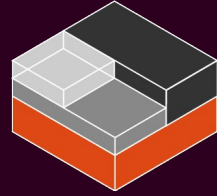
LXD: the container hypervisor



Let's recap

- CGroups are a nice and flexible way to limit resources for processes on Linux
- LXD abstracts those for you and offers more user friendly knobs
- This isn't a perfect solution, still a lot of resources that aren't accounted for

LXD: the container hypervisor



LXD itself

- Written in Go
- Fully translatable
- API client in Go and python
- Apache2 licensed
- No CLA

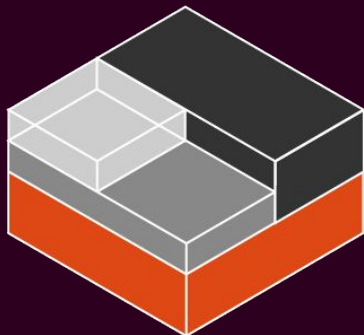
```
git clone https://github.com/lxc/lxd
```

Stéphane Graber
LXD project leader, Canonical Ltd.



stgraber@ubuntu.com @stgraber
<https://www.stgraber.org>

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



Questions?

Try it yourself at: <https://linuxcontainers.org/lxd/try-it>
Stickers are available in front!