Getting started with LXD

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System containers

What are they?

➔ 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

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

What it IS

Host A

nova-compute-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

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.*
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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
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LXD is available on

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

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

git clone https://github.com/lxc/lxd
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Let’s recap

➔ 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
Questions?
Now it’s your turn!