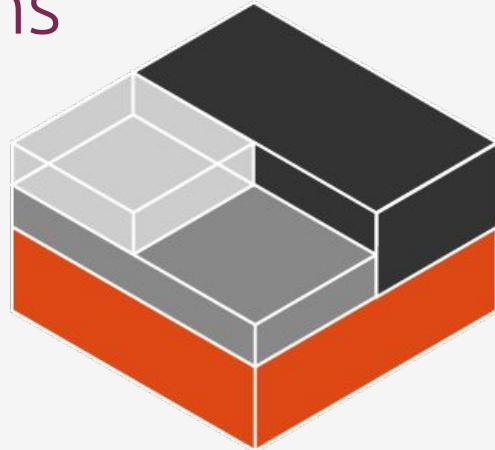


The LXD roadmap

What to expect over the next 6 months





Meet the team

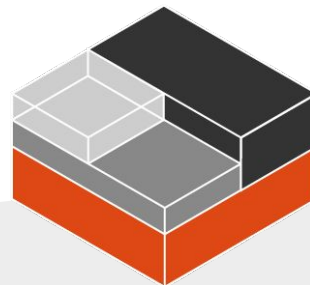


The roadmap

Virtual machines



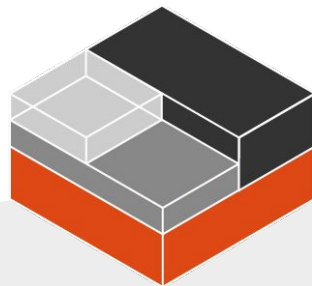
- **USB, PCI and flexible GPU passthrough**
Local and remote USB devices, arbitrary PCI devices and mdev/SR-IOV GPUs.
- **vTPM devices**
Persistent virtual TPM devices (encrypted storage, HSM, attestation, ...).
- **Stateful snapshots & stateful stop**
VM hibernation and state restoration, first step towards live migration.
- **VirtioFS support**
Much faster alternative to 9p. Automatically used by guests that support it.
- **Hotplug of network devices**
Allow adding up to 4 additional network interfaces while the VM is running.
- **OVS/OVN offloading**
Attach an SR-IOV NIC to a specific OVS bridge.



Containers



- **vTPM devices**
Persistent virtual TPM devices (HSM, attestation, ...).
- **Checkpoint restore**
Improve the state of stateful stop, snapshots and live-migration.
- **CGroup handling improvements**
Daily testing for CGroupV1 and CGroupV2, fixes to LXD and LXCFS.



Networking



- **Security groups and firewalling**

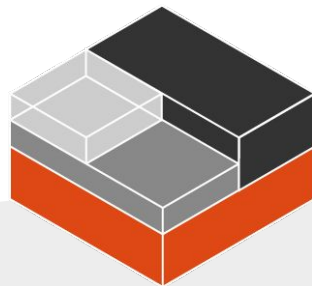
Supported for OVN and managed bridges, allow restricting ingress/egress on a per network/instance basis.

- **Routed external subnets & project integration**

Make addresses external to the network available for consumption by the network and its instances.

- **Refactoring of low-level network operations**

Currently calling "iproute" a lot, replace with native netlink API.



Clustering & projects



- **Token based cluster join**

Allow pre-adding a cluster member, getting a one-time token back to use during join.

- **Improved intra-cluster security**

Switch to per-cluster certificate for internal queries, clear trust entry on removal.

- **Health and warnings API**

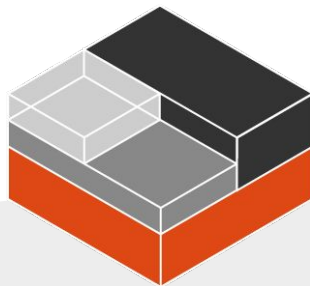
Record and expose warning messages, cluster-wide clear when fixed, ideal for monitoring.

- **Project resource usage**

Report how much of the limited resources have been consumed.

- **Improved cluster image management**

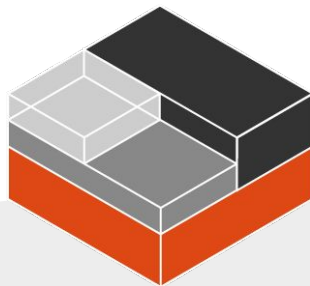
More robust replication and less racy image refreshes.



Storage



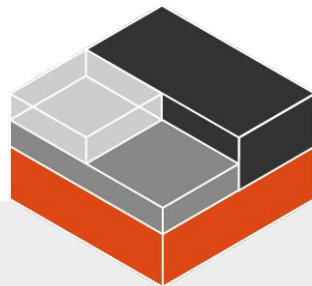
- **Interactive `lxd recover` to replace clunky `lxd import`**
Interactively re-add the pools, then discover and import what's on them.
- **Usage reporting on all storage volumes**
Currently limited to instances, add new API fields to report usage on all volumes.



Core



- **Project and role restricted client certificates**
Allows for a specific certificate to be restricted to an operator role on a subset of projects.
- **Auto-generated REST API documentation**
Modern version of our dear rest-api.md.
- **Transition to core20 for the LXD snap**
Currently on core18 (Ubuntu 18.04), will get us onto Ubuntu 20.04 as a base.



Low-level (kernel, libraries, ...)



- **VFS based filesystem shifting**

Instant container creation, easy sharing of data with the host and between containers, ...

- **Isolated user namespaces**

User namespaces with a full 32bit uid/gid range and guaranteed to be isolated from all others.

- **Core scheduling**

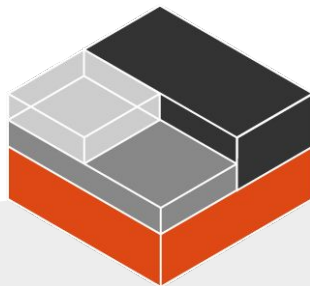
Spectre/Meltdown mitigation mechanism while getting as much performance as possible.

- **Per PID namespace max_pid value**

Allow containers to reduce their max_pid value.

- **CGroup + pidfd integration**

Support for killing all processes in a cgroup.





The rest



We're hiring!

<https://grnh.se/b9bb75f21us>



Questions ?

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

