A year of LXD development

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LXD: A year of development

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.*
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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.*
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Some highlights

➔ Second LTS release
➔ 10 feature releases
➔ 3 bugfixes releases
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Some highlights
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Some highlights

Installing Linux...

This process may take a few minutes. Starting the Linux container.
Welcome to crosh, the Chrome OS developer shell.
If you got here by mistake, don't panic! Just close this tab and carry on.
Type 'help' for a list of commands.
If you want to customize the look/behavior, you can use the options page.
Load it by using the Ctrl+Shift+P keyboard shortcut.

```
crosh> vmc start termina
(termina) chronos@localhost ~ $ lxc list
To start your first container, try: lxc launch ubuntu:18.04
```

```
+----------+----------+----------+----------+--------+-------------+
| NAME     | STATE    | IPV4     | IPV6     | TYPE   | SNAPSHOTS   |
|----------+----------+----------+----------+--------+-------------+
| penguin  | RUNNING  | 100.115.92.199 (eth0) |        | PERSISTENT | 0           |
+----------+----------+----------+----------+--------+-------------+
(termina) chronos@localhost ~ $ 
```
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Some highlights
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Some highlights

Processing triggers for desktop-file-utils (0.23-1) ...
Setting up libcompress-bzip2-perl (2.25-1) ...
Setting up libcapture-tiny-perl (0.44-1) ...
Setting up libpangoxt-1.0-8-amd64 (1.40.85-1) ...
Setting up libtie-simple-perl (1.04-1) ...
Setting up libopenal-data (1:1.17.2-4) ...
Processing triggers for libc-bin (2.24-11+deb9u3) ...
Setting up liblocale-gettext-perl (1.07-3+b1) ...
Setting up libpango-1.0-0-amd64 (0.6.2.5+b2) ...
Setting up timmingmmb-soundfont (1.3.2) ...
Setting up libmad0-amd64 (0.19.13-8+deb9u1) ...
Setting up libsndio6.1-amd64 (1.1.0-3) ...
Setting up fonts-sil-gentium (20080126:1.03)
Processing triggers for hicolor-icon-theme
Setting up frozen-bubble-data (2.212-7) ...
Setting up liblang2-amd64 (2.3.1-5) ...
Setting up fonts-sil-gentium-basic (1.6-7)
Setting up libfluidsynth-amd64 (1.16-4)
Processing triggers for fontconfig (2.11.0)
Setting up libclass-inspector-perl (1.31-1)
Setting up libpgol1.0-0-amd64 (1.40.5-1)
Setting up musescore-soundfont-gm (2.0.3+df)
Setting up libopencv1-amd64 (1:1.17.2-4+b2)
Setting up libcaca0-amd64 (0.99.beta19-2+b2)
Setting up libfile-sharedir-perl (1.102-1)
Setting up libalien-sdl-perl (1.446-3) ...
Setting up libsd11-debian-amd64 (1.1.15+dfsg1-4) ...
Setting up libmikmod3-amd64 (3.3.10-1) ...
Setting up libslf2.0-0-amd64 (2.6.11-3+b1) ...
Setting up libslf1-image.2-amd64 (1.1.12-5+deb9u1) ...
Setting up libslf1-pango1-amd64 (0.1.2-6) ...
Setting up libslf1-gfxi.2-5-amd64 (2.6.25-5) ...
Setting up libslf1-mixer1.2-amd64 (1.1.12-11+b3) ...
Setting up libslf1-perl (2.546-3+b1) ...
Setting up frozen-bubble (2.212-7+b3)
Processing triggers for libc-bin (2.24-11+deb9u3)

stgraber@penguin:~$
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LXD 3.0 LTS

➔ Clustering support
➔ LXD-P2C
➔ NVIDIA runtime integration
➔ Hotplug of UNIX char/block devices
➔ Local and remote migration of storage volumes
➔ Proxy device
➔ Event API through /dev/lxd
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LXD 3.1

➔ Backup support
➔ Automatic FAN networking for clusters
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LXD 3.2

➔ Container migration between storage pools
➔ Unix, UDP and port ranges support for proxy
➔ Single query cluster join API
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LXD 3.3

- Image sharing with nested containers
- New implementation of lxc-to-lxd
- API to query host networking details
- Container deletion protection
- HAPerxy protocol in proxy device
- uid/gid/mode control for UNIX in proxy device
- Built-in debugging/profiling API
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LXD 3.4

- Shared DNS on FAN bridges in cluster
- API bulk queries for containers
- File capabilities support
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LXD 3.5

➔ Improved Candid support
➔ Synchronised cluster upgrades
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LXD 3.6

➔ Projects
➔ Snapshot for custom storage volumes
➔ Extended support for NVIDIA runtime
➔ Minimal CGroupV2 support
➔ Supported for encrypted certificates
➔ Uevent injection for USB devices
➔ Optimized network info retrieval
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LXD 3.7

- Incremental container copies (refresh)
- Switched to EC keys
- Extra exec metadata
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LXD 3.8

➔ Automated container snapshots
➔ Copy/move between projects
➔ Cluster image replication
➔ Separate cluster address
➔ Shift protection
➔ Improved USB passthrough
➔ Improved migration negotiation (ZFS compression)
Questions?

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