Introduction

A Linux Container is an operating-system-level virtualization environment for running multiple isolated Linux systems on a single Linux control host (Wikipedia LXC). It can be also defined as a lightweight VM but extremely fast and easy to deploy.

There is not much overhead and therefore it's the perfect solution for effective use of resources.

No extra kernel boot is necessary on startup resulting in a super fast boot.

Linux Containers are introduced in Proxmox VE 4.0 and support the Proxmox Storage Model.

System requirements

- Proxmox VE 4.0 or higher

Features

- Support of local directories(NOTE:not on ZFS use instead ZFSPoolPlugin), NFS, ZFS, LVM, Ceph and DRBD9 (other will/can follow)
- manipulate disk size
- snapshot, rollback, clone, linked clone (all these features need storage support)
- Kernel namespaces (ipc, uts, mount, pid, network and user)
- Apparmor profiles
- Seccomp policies
- Chroots (using pivot_root)
- Kernel capabilities
- CGroups (control groups)
- Migration
- Backup and restore
- Integrated firewall
- Network support for VLAN, IPv4, IPv6

Supported OS

- Debian 6, 7, 8
- CentOS 6
- Ubuntu 12.04, 14.04, 15.04
- Archlinux

Other OS are following step by step.

Manage containers

Management can be done either via the web gui, or via command line tools

Get a container template

All templates can be downloaded at the GUI.

NOTE: Only the supported OS work

If the containers are not yet visible use the following pve command to update the list.

```
# pveam update
```

Create container

After you have downloaded a template, you can create a container based on it.

A GUI wizard will guide you through the creation process.

It is also possible to create a container with the pct command line tool. More details see manpages.

```
pct create 104 /var/lib/vz/template/cache/debian-8.0-
standard_8.0-1_amd64.tar.gz \
 -description LXC -rootfs 4 -hostname pvecontainer01 -memory 1024 -nameserver
8.8.8.8 \
 -net0
name=eth0,hwaddr=52:4A:5E:26:58:D8,ip=192.168.15.147/24,gw=192.168.15.1,bridge
=vmbr0 \
 -storage local -password changeme
```

Start container

There are two possibilities to start a container:

either on the GUI or on the command line:

```
pct start 100
```

Stop container

Stopping a container can be done in a similar way like starting a container.

```
pct stop 100
```

Backup container

The backup can be done in three different modes: snapshot, suspend and stopped. This mode options have only an effect if the container is running.

Snapshot mode: this feature depends on the filesystem and so it must support snapshots. If snapshot mode is chosen but it's not supported by the filesystem the backup will be done in suspend mode.

Suspend mode: the container will be frozen during the time the backup is running. NOTE: Container is not running untill backup is done!

Stopped mode: the container will be turned off and restarted after backup.

The command line tool backing up Linux container is vzdump. For more information read vzdump manpage.

```
vzdump 100 -compress lzo -dumpdir /var/lib/vz/dump/ -mode snapshot -remove 0
```

Restore container

It is easy and fast to restore a container.

On the GUI it was only possible to restore a container with the same VMID and if there is no VM with this VMID. In Proxmox VE 3+ it can be restored to any available VMID.

If you need to change the VMID or override a VM you can use the command line tool pct.

For more information read the man page of pct.

```
pct restore 101 /var/lib/vz/dump/vzdump-lxc-100-2015_06_22-11_12_40.tar.lzo
```

Migrate container from OpenVZ to Linux container

Follow this howto:

- Convert OpenVZ to LXC

Resources

https://pve.proxmox.com/wiki/Linux_Container

https://linuxcontainers.org/lxc/getting-started/

http://blog.scottlowe.org/2013/11/25/a-brief-introduction-to-linux-containers-with-lxc/

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