

Note on Logical Volume Manager (LVM)

What is LVM?

LVM, short for Logical Volume Manager, is a system tool used in Linux and Unix-like operating systems to manage storage devices and create logical volumes. It provides a layer of abstraction between the physical storage devices and the operating system, allowing for flexible allocation and management of storage space.

How was the environment without LVM?

Without LVM, managing storage in Linux environments was more complex and rigid. Administrators had to deal directly with physical partitions, which required careful planning and often involved downtime for resizing or migrating data. Tasks like resizing partitions or adding new storage devices were more cumbersome and could potentially lead to data loss if not handled correctly.

What problem does LVM solve?

LVM solves several storage management challenges, including:

- **Dynamic Storage Allocation:** LVM allows for the dynamic allocation and resizing of logical volumes without disrupting the data stored on them.
- **Volume Management:** It simplifies the management of large storage arrays by grouping physical volumes into volume groups, which can then be divided into logical volumes as needed.
- **Data Protection:** LVM supports features like mirroring, striping, and snapshotting, which enhance data protection and fault tolerance.
- **Backup and Restoration:** With LVM, it's easier to create backups and restore data because logical volumes can be easily resized and moved between physical volumes.

Where is LVM commonly used?

- LVM is commonly used in enterprise environments, data centers, cloud computing platforms, server setups, virtualization environments, and desktop Linux distributions for users who require advanced storage management capabilities.

File Systems

/var /opt/app

follow mounting process

Create a Filesystem: `mkfs -t <filesystem_type> <logical_volume_path>`

Logical Volumes (LV)

or

Using -l followed by the number of extents: `lvcreate -l 100 -n <name> <volume_group>`

Using -L followed by the actual size: `lvcreate -L <size> -n <name> <volume_group>`

Volume Group (VG)

use `vgdisplay` or `pvs` to list all created volume groups

To create a volume group, I am creating a single volume group from 3 physical volumes, where the volume group name is "myvg."

create volume group with physical extent size of 8MB, `vgcreate -s 8M` ...

or `vgcreate myvg /dev/sda1 /dev/sdb1 /dev/sdc1`

Physical Volumes (PV)

use `pvdisplay` or `pvs` to list all created physical volumes

Create Physical volume from partition

`pvcreate /dev/sda1`

`pvcreate /dev/sdb1`

`pvcreate /dev/sdc1`

Storage Devices

To list available devices, use `lsblk` or `fdisk -l`; if not partitioned, utilize `parted` or `fdisk` for partitioning.