# LVM:
# Logical Volume Manager

# Flexible Capacity

- You can create file systems that extend across multiple storage devices.


- You can aggregate multiple storage devices into a single logical volume.

# Easily Resize Storage While Online

- Expand or shrink file systems in real-time while the data remains online and fully accessible.

# Online Data Relocation

- Easily migrate data from one to another while online.

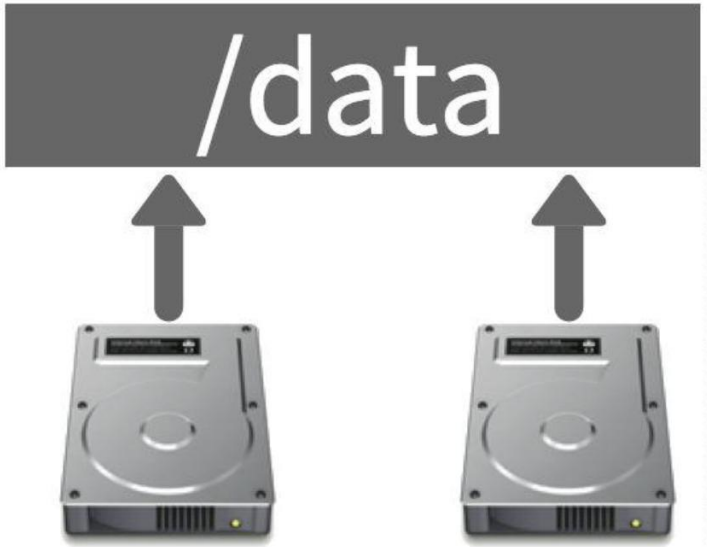
# Convenient Device Naming

- You can use human-readable device names of your choosing.

  /dev/vg_database/lv_db_logs vs /dev/sdb3

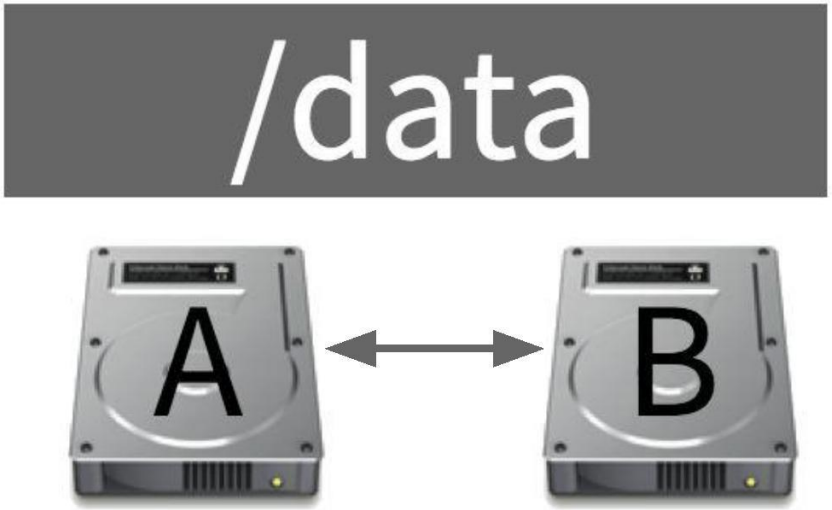
# Disk Striping

- Increase throughput by allowing your system to read data in parallel.



# Data Redundancy / Data Mirroring

- Increase fault tolerance and reliability by having more than one copy of your data.



# Snapshots

- Create point-in-time snapshots of your filesystems.

File Systems /var /opt/app

Storage Devices



File Systems /var /opt/app

Physical Volumes (PV)



Storage Devices



File Systems /var /opt/app

Volume Group (VG)

Physical Volumes (PV)

Storage Devices

File Systems /var /opt/app

Logical Volumes (LV)

Volume Group (VG)

Physical Volumes (PV)

Storage Devices

# Logical Volume Creation Process

- Create one or more physical volumes.
- Create a volume group from those one or more physical volumes.
- Create one or more logical volumes from the volume group.

# LVM Summary

- Logical Volume Manager introduces layers of abstraction including:
  - Physical Volumes (PVs)
  - Volume Groups (VGs)
  - Logical Volumes (LVs)

# LVM Summary - Creating LVs

```
pvcreate /dev/sdb

vgcreate vg_name /dev/sdb

lvcreate -L 100G -n lv_name vg_name

mkfs -t ext4 /dev/vg_name/lv_name
```

# LVM Summary - Extending LVs

```
lvextend -L +10G -r /dev/vg_name/lv_name

pvcreate /dev/sdc

vgextend vg_name /dev/sdc
```

# LVM Summary - Mirrored LVs

```
lvcreate -m 1 -L 100G -n lv_name vg_name
```

# LVM Summary - Removing LVs

```
lvremove /dev/vg_name/lv_name

vgreduce vg_name /dev/sdb

vgremove vg_name

pvremove /dev/sdb
```