

# LVM: Logical Volume Manager

# Flexible Capacity

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

`/var = 150 GB`



50 GB



50 GB



50 GB

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

# Easily Resize Storage While Online

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

# Online Data Relocation

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- Easily migrate data from one to another while online.



# Convenient Device Naming

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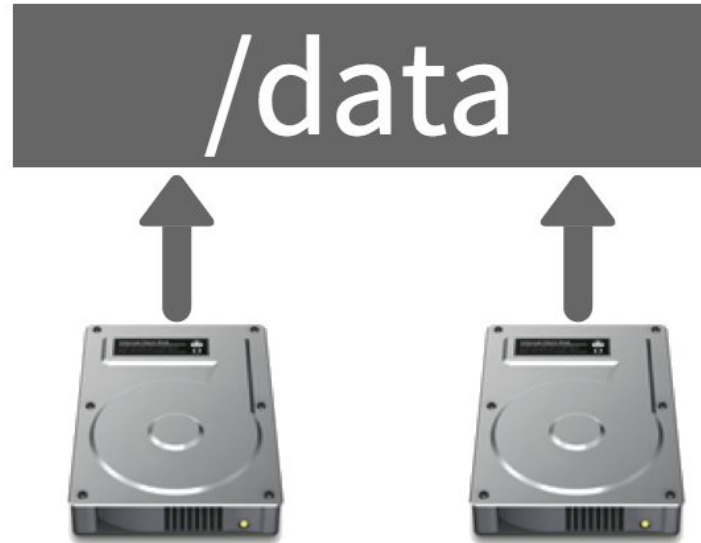
- You can use human-readable device names of your choosing.

`/dev/vg_database/lv_db_logs` vs `/dev/sdb3`

# Disk Striping

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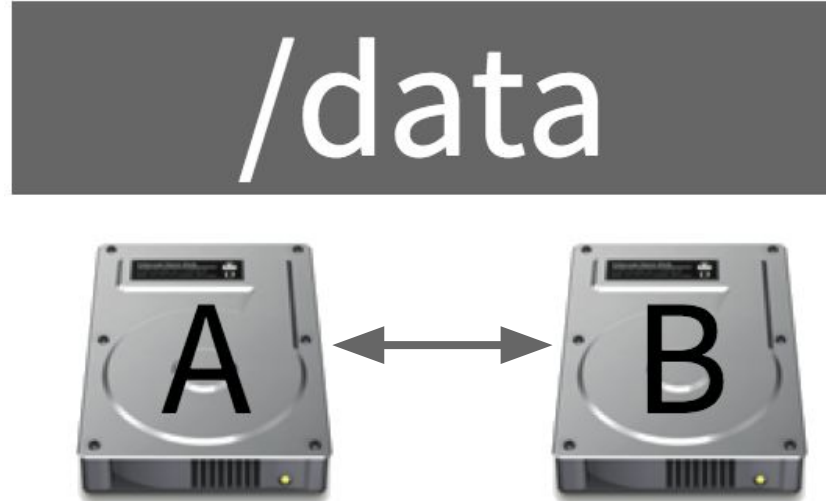
- Increase throughput by allowing your system to read data in parallel.



# Data Redundancy / Data Mirroring

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



# Snapshots

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- 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

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- 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

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

# LVM Summary - Creating LVs

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```
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

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

```
pvccreate /dev/sdc
```

```
vgextend vg_name /dev/sdc
```



# LVM Summary - Mirrored LVs

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

# LVM Summary - Removing LVs

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```
lvremove /dev/vg_name/lv_name
```

```
vgreduce vg_name /dev/sdb
```

```
vgremove vg_name
```

```
pvremove /dev/sdb
```