Configuring RAID

LPIC-2: Linux Engineer (201-450)

Objectives:

At the end of this episode, I will be able to:

1. Define the differences between software and hardware RAID
2. Implement Linux Software RAID 0, 1, and 5.

> Additional resources used during the episode can be obtained using the download link on the overview episode.

- Linux Software RAID
  - MD = multiple devices
  - `/dev/md0`
- RAID
  - Redundant Array of Independent Disks
  - Supports (Personalities)
    - RAID 0 Stripe
    - RAID 1 Mirror
    - RAID 4 Parity disk
    - RAID 5 Parity stripe
    - RAID 6 Double Parity
    - RAID 10 Striped mirrors
- Getting started with software RAID
  - Install mdadm
    - `sudo apt install mdadm -y`
  - Select the disks to use
    - `lsblk`
  - (Optional) Erase the super block
    - If previously used in a RAID array
    - `sudo mdadm --zero-superblock /dev/sdb /dev/sdc /dev/sdd /dev/sde /dev/sdf`
- Creating a software RAID array
  - RAID 1
    - `sudo mdadm --create --verbose /dev/md0 --level=1 --raid-devices=2 /dev/sdb /dev/sdc`
  - RAID 5
    - `sudo mdadm --create --verbose /dev/md1 --level=5 --raid-devices=3 /dev/sdd /dev/sde /dev/sdf`
- Verify creation
  - `lsblk`
  - `cat /proc/mdstat`
  - (Optional) Wait for recovery/resync to reach 100%
- Mounting a RAID disk

    - `sudo mkfs.ext4 /dev/md0`
    - `sudo mkfs.ext4 /dev/md1`
    - `sudo mkdir /mnt/raid1 /mnt/raid5`
    - `sudo mount /dev/md0 /mnt/raid1`
    - `sudo mount /dev/md1 /mnt/raid5`
    - `df -h`
- Make the config persistent
    - `sudo mdadm --detail --scan | sudo tee -a /etc/mdadm/mdadm.conf`
    - `sudoedit /etc/fstab`
    - `/dev/md0 /mnt/raid1 ext4 defaults 0 0`
    - `/dev/md1 /mnt/raid5 ext4 defaults 0 0`
- Be careful: may UDEV may renumber after first boot
    - Consider using aliases in `/dev/md`
    - `/dev/md/DonsLaptop:0`