Understanding Linux LVM - Logical Volume Management

Session 1: Basics of Storage Management

When dealing with storage devices in Linux, the process involves three key steps: partitioning, formatting or creating a filesystem, and mounting. Mounting a partition is a temporary action, and to make it persistent across reboots, it must be added to the `/etc/fstab` file.

In scenarios where data exceeds the capacity of a single disk, Logical Volume Management (LVM) becomes crucial.

Session 2: Extending Logical Volumes

When extending a Logical Volume (LV), the space must come from the same Volume Group (VG). If there's no space available, two options exist: add more storage or reallocate space from an existing LV to another.

Reducing LV size involves unmounting, cleaning, recreating an inode table, shrinking the LV, and remounting. Extending an LV requires space in the VG and can be achieved using `lvextend` and `resize2fs` for ext4 filesystem or `xfs-growfs` for xfs.

Session 3: Introduction to LVM and Creating Logical Volumes

LVM allows combining multiple disks into a single logical entity, simplifying storage management. The process involves creating Physical Volumes (PV), forming a Volume Group (VG) from these PVs, and then carving out Logical Volumes (LVs) from the VG.

Session 4: Extending LV and Managing Filesystems

Extending an LV is only possible within the original VG. After extension, resizing the filesystem using `resize2fs` ensures proper utilization of the added space without data loss.

Various filesystem types like ext4 and xfs exist, each with specific commands for manipulation.

Session 5: Fstab and Permanent Mounting

Fstab, the filesystem table, is pivotal for permanent mounts. Entries in `/etc/fstab` define device, mount point, filesystem type, options, disk check order, and disk synchronization.

Commands like `mount`, `mount -a`, `lsblk`, and `blkid` help manage and verify mounts and devices.

Session 6: Swap Space Management

Swap space serves as an extension of RAM when physical memory is insufficient. Creating a swap partition involves partitioning, making it a swap partition with `mkswap`, and activating it with `swapon`.

Monitoring RAM and swap space can be done using `free -m` and `swapon -s`.

By following these detailed steps and understanding the intricacies of LVM, Fstab, and swap space, users can efficiently manage and optimize their Linux storage systems.

Check_Out_Detailed_Blog:-https://medium.com/@srivastavayushmaan1347/understanding-linux-lvm-logical-volume-management-7b318870a260