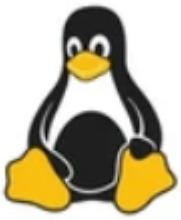
ADVANCE LINUX ADMINISTRATION MARATHON

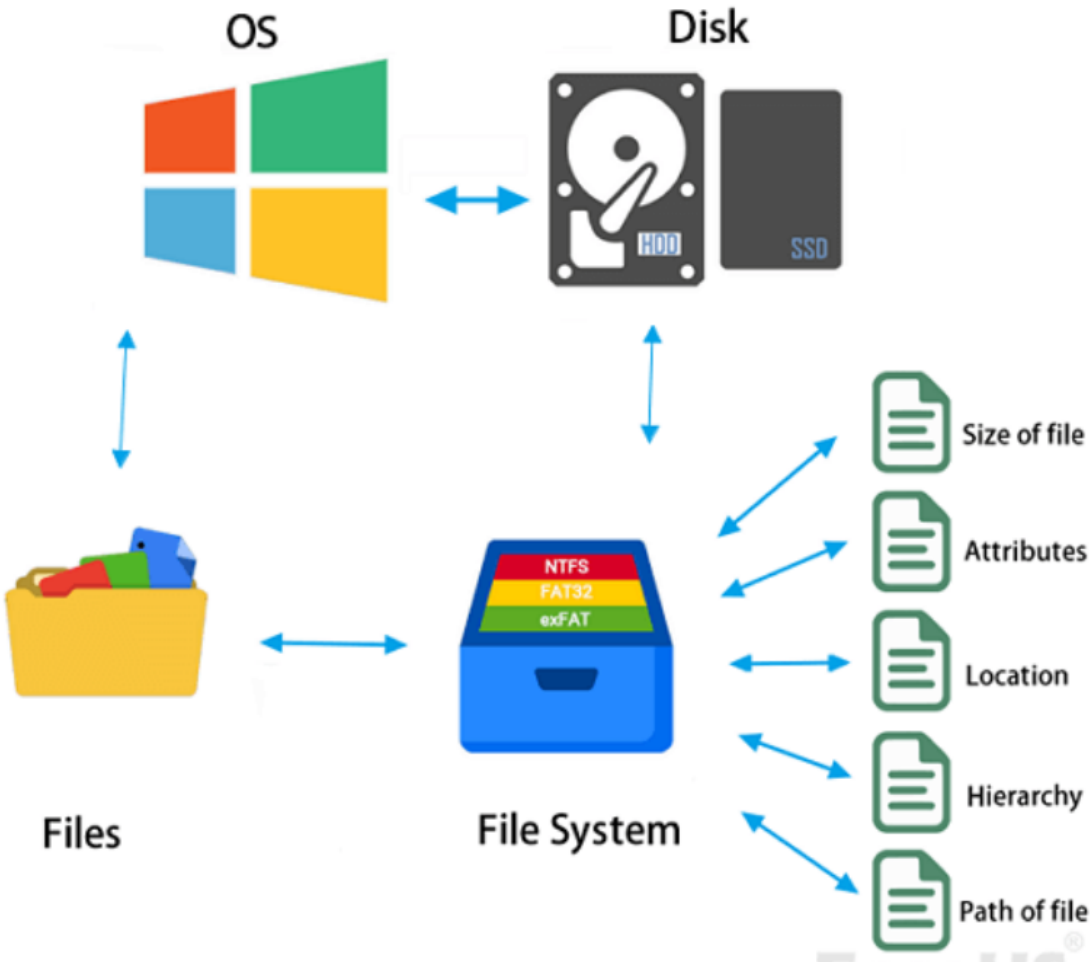
DAY1

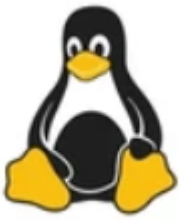
Sumeha Jakate



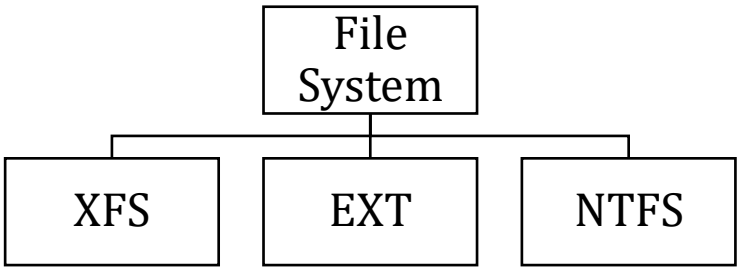
➢ What is file system?

- It is a method and data structure used by the operating system to control how data is stored and restricted.
- Operating system uses file system to organize, store and manage files on a storage device such as hard driver or SSD.





➢ File System categories:

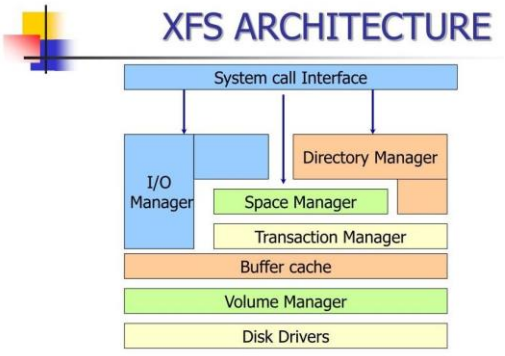


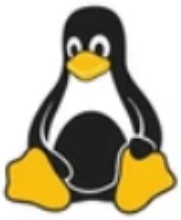
1) XFS

- High Performance
- Scalable
- Default file system in RHEL 9
- Well suitable for handling large files upto 8 EiB

Features-

- Journaling
- Dynamic Inode allocation
- Delayed allocation
- Scalability

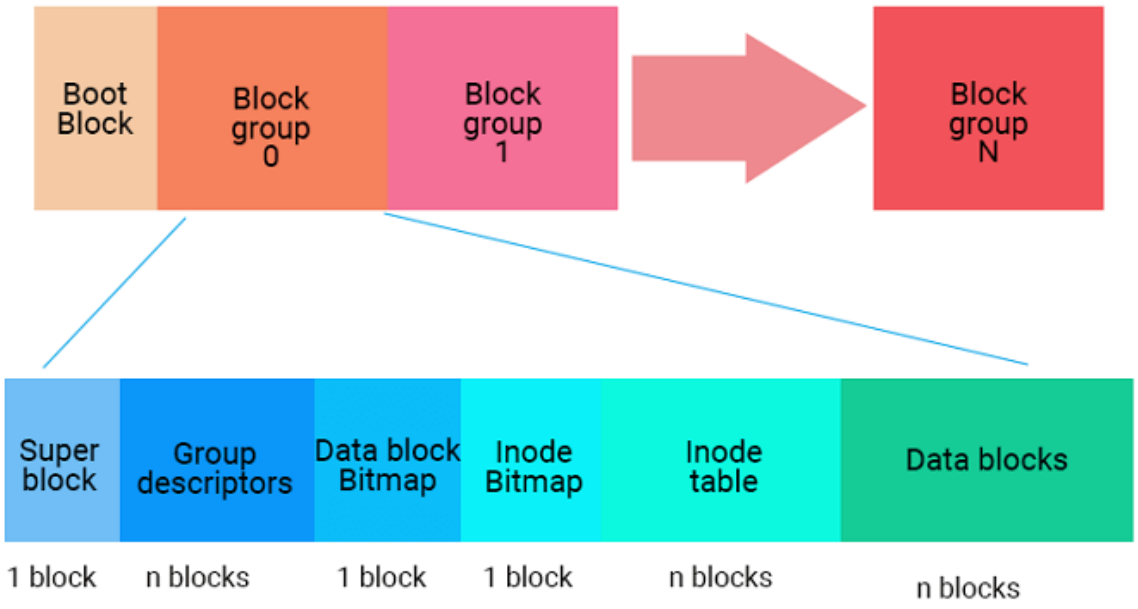




2) ext2/3/4

- ext, known as the extended file system, was implemented in April 1992 as the first file system created specifically for the Linux kernel.
- ext4 is the default file system from RHEL6 OS.

  Features-
  - Journaling
  - Large File support
  - Extents
  - Delayed Allocation

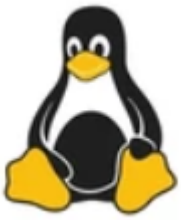


EXT File System Structure

3) NTFS

- New Technology File System.
- Developed by Microsoft.
- Commonly used in Windows Operating System.
- It can store upto 8 PiB of data.
- It is also compatible with Operating Systems like Linux and BSD through specific drivers.

File Systems	Best for	Key Features	Drawbacks
ext4	General-purpose use	Journaling, fast, reliable	Limited advanced features
ext3	Older systems, ext2 compatibility	Simple Journaling	Slower than ext4
btrfs	Modern cloud / server environments	Snapshots, RAID, Copy-on-write	Still maturing



➢ UUID

A UUID, or Universally Unique Identifier, is a 128-bit number or 36-character alphanumeric string that's used to identify information in computer systems. UUIDs are often used to identify rows in a database table and are highly likely to be unique globally.

➢ blkid

`blkid` is a command-line utility in Linux used to **display or locate block device attributes**. It helps identify block devices (such as hard drives, USB drives, or partitions) and retrieve useful information about them, such as their UUID (Universally Unique Identifier), filesystem type, LABEL, and PARTUUID.

Usage:

- **Basic Command**:
  `blkid`
  This command will list all block devices and their attributes.
- **Specific Device**: To check the details of a specific device:
  `blkid /dev/sda1`

Use Cases:

- **Persistent Mounting:** UUIDs or LABELs are often used in /etc/fstab for mounting partitions, as they remain consistent even if the device path (e.g., /dev/sda1) changes.
- **Troubleshooting:** blkid is handy for identifying the correct partition when managing filesystems or storage devices.