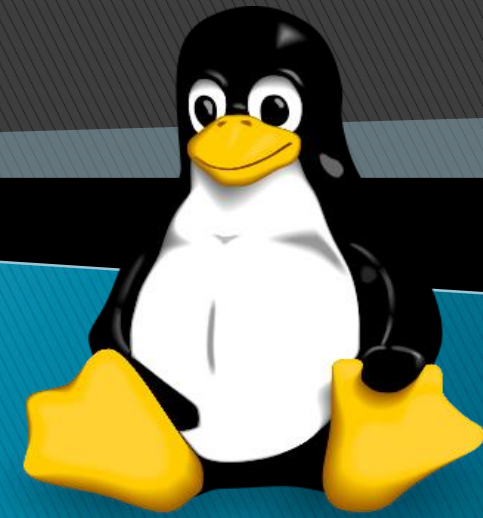


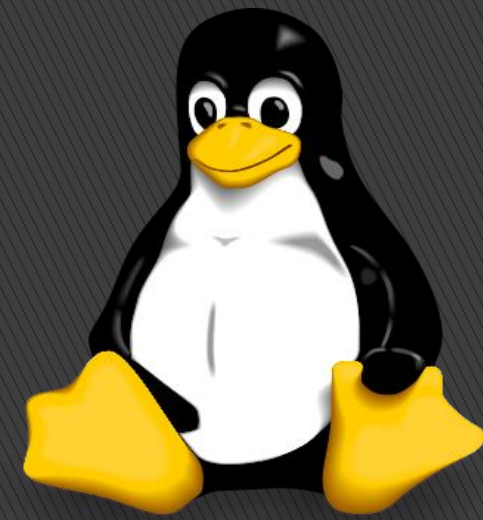
# Disk Management In Linux



# Disk Partitioning

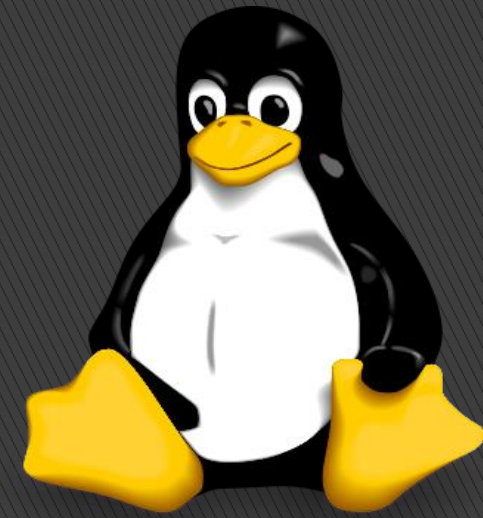
Disk partitioning allow a hard drive to be divided into multiple logical storage units called as **partition**.

Separating a disk into partition allow administrator to can use different partition to perform different functions.



# Disk Naming Convention

Linux maintain disk naming convention for SATA ,PATA and Virtual Disk as follows...



# For SATA

DISK 1 – /dev/sda

DISK 2 – /dev/sdb

Partition 1 /dev/sda1

Partition 2 /dev/sda2

Partition 3 /dev/sda3

.

.

.

Partition 1 /dev/sdb1

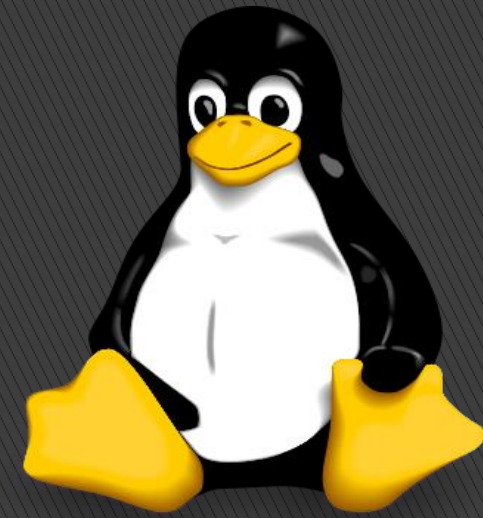
Partition 2 /dev/sdb2

Partition 3 /dev/sdb3

.

.

.



# For PATA

DISK 1 – /dev/hda

Partition 1 /dev/hda1

Partition 2 /dev/hda2

Partition 3 /dev/hda3

.

.

.

DISK 2 – /dev/hdb

Partition 1 /dev/hdb1

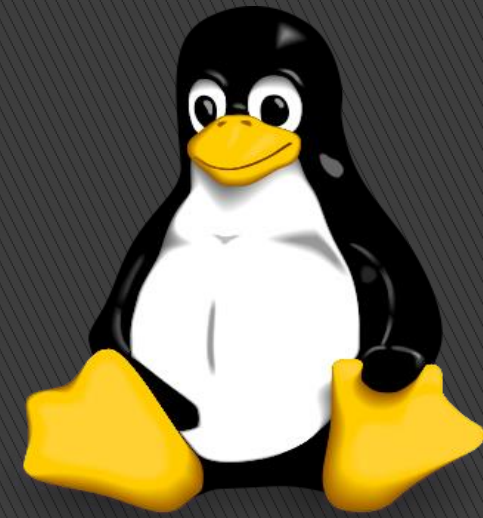
Partition 2 /dev/hdb2

Partition 3 /dev/hdb3

.

.

.



# For Virtual

DISK 1 – /dev/vda

Partition 1 /dev/vda1

Partition 2 /dev/vda2

Partition 3 /dev/vda3

.

.

.

DISK 2 – /dev/vdb

Partition 1 /dev/vdb1

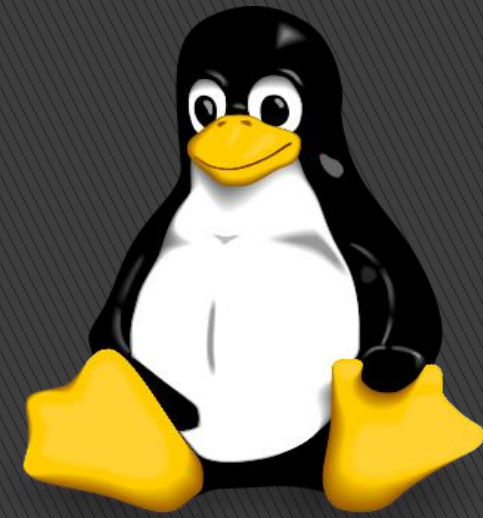
Partition 2 /dev/vdb2

Partition 3 /dev/vdb3

.

.

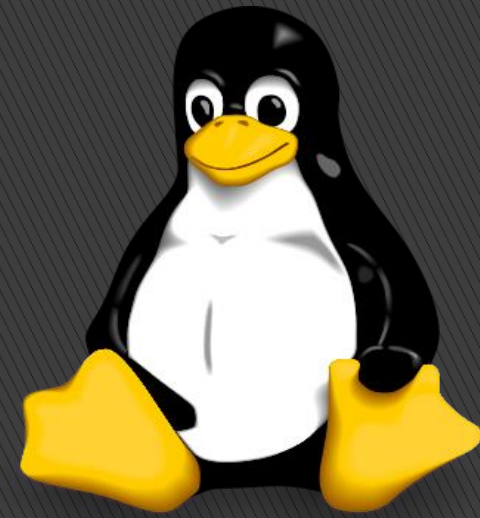
.



# Partition Types

Partition divide into three types

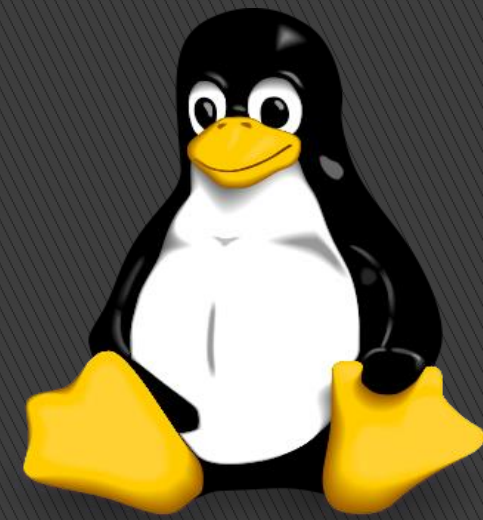
1. Primary Partitions
2. Extended Partitions
3. Logical Partitions





# 1. Primary Partitions

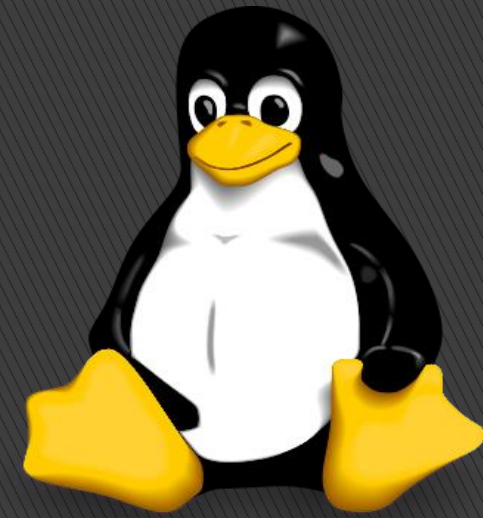
The number of partition was limited from the very beginning and we can create maximum four partitions. These partitions called primary partitions.





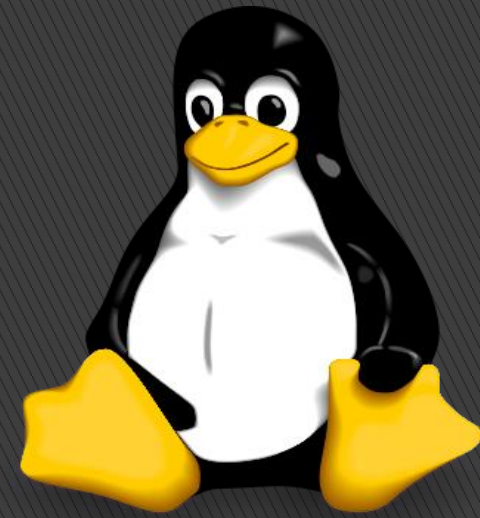
## 2. Extended Partitions

Extended partition use to overcome limit of primary four partition, if we want more than four partition then we can create one of the extended partition within a primary partition.



### 3. Logical Partitions

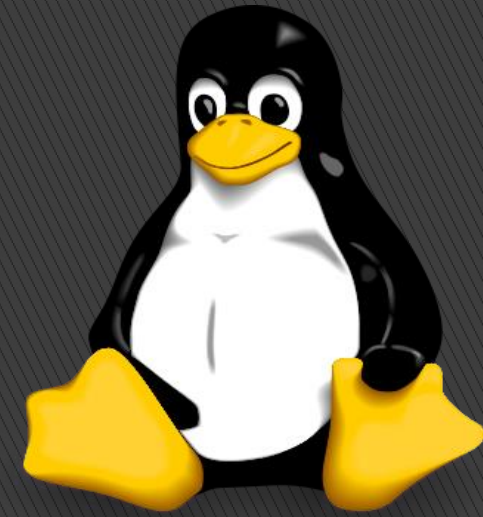
A Logical partition is a partition that created inside the extended Partition.



# What is File System

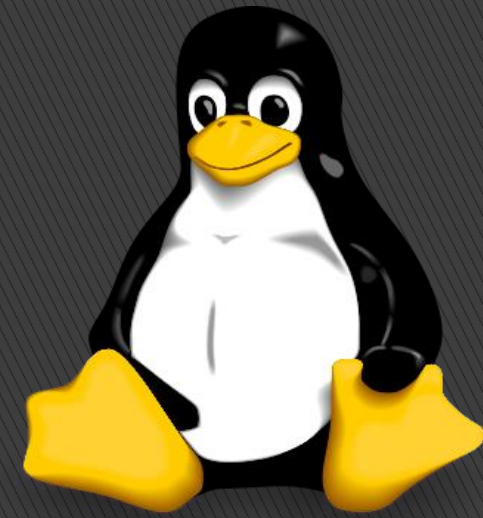
A file system is the method and structure that an operating system use to keep files on disk or partition, that is a way of how files are stored on the disk.

Eg. ext2, ext3, ext4, xfs etc.



# Ext (Extended File System)

This is the first Linux file system. It was used in early versions of Linux. It has been removed from RHEL.



# EXT2 File System

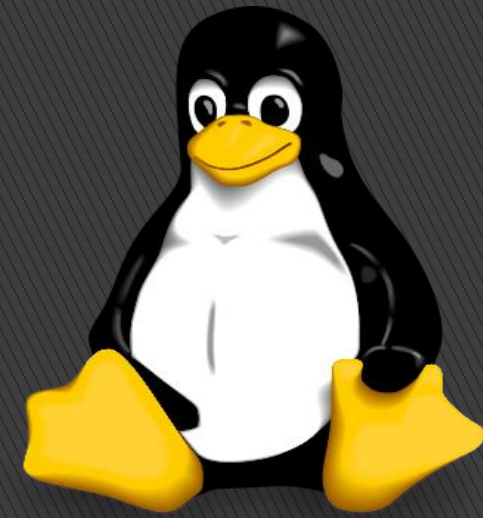
This is the second generation of EXT file system.

It provides very basic features of file system.

It was developed in 1980.

It was the default file system before RHEL5.

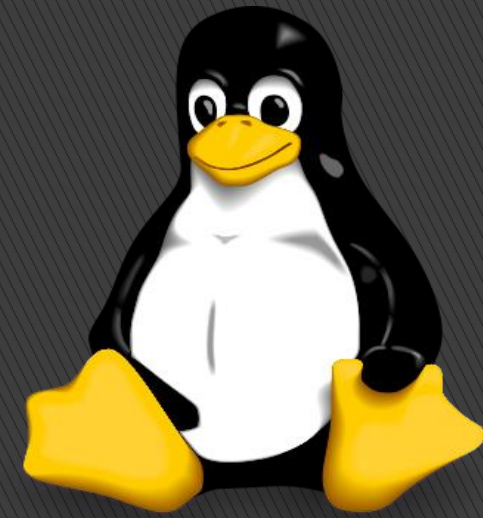
It has been deprecated in RHEL7 and would be removed in next version.



# EXT3 File System

This is third generation of EXT file system. This was the default file system in RHEL5. It includes several enhanced features.

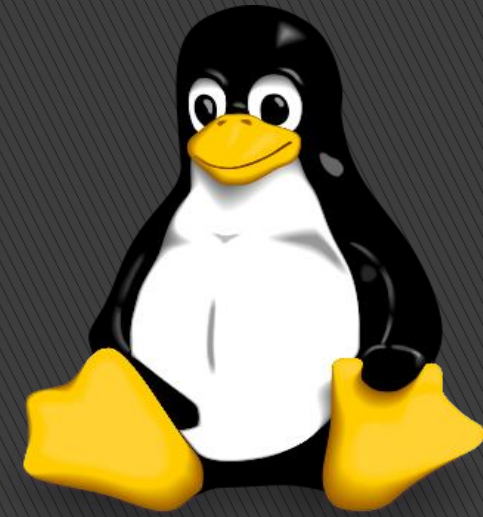
- ▶ It supports file systems up to 16TiB in size.
- ▶ It supports file up to 2TiB in size.
- ▶ It supports up to 32000 subdirectories.



# EXT4 File System

This is fourth generation of EXT file system. This was the default file system in RHEL6.

- ▶ It supports file systems up to 1 EiB.
- ▶ It supports file up 16TiB in size.
- ▶ It supports unlimited directories.
- ▶ It uses a series of contiguous physical blocks on hard disk known as extents. The extents are used to improve the performance of very large files.



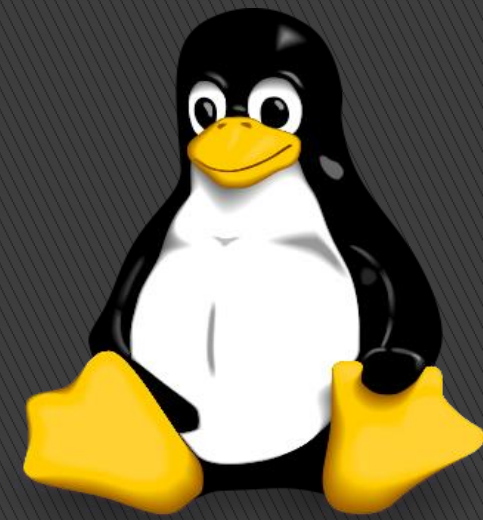


# XFS (X-File System) File System

This file system was developed by Silicon Graphics for their version of UNIX.

Later it was adopted by most Linux distributions including RHEL. This is the default file system in RHEL 7/8.

This file system is based on 64-bit extent. It uses journaling for metadata operations. It supports file systems and files of sizes up to 8EiB.



# For Create Disk Partitioning

1. For Show Available Disk :

```
#fdisk -l
```

2. For Show Specific Disk

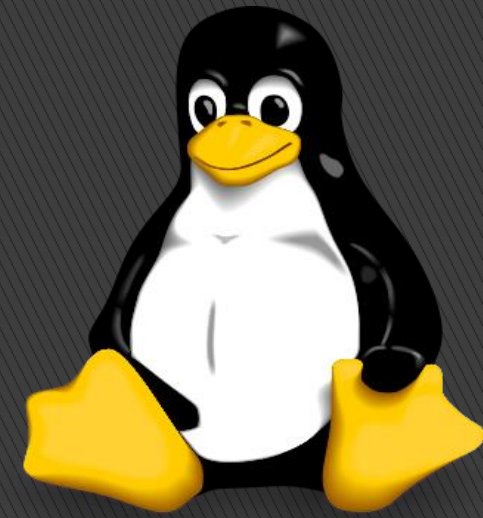
```
#fdisk -l /dev/sdb
```

3. For Create New Partition

```
#fdisk /dev/sdb
```

4. For update partition table without reboot system

```
#partprobe /dev/sdb
```



# For Create Disk Partitioning

## 5. Create file system on partition (Format)

```
#mkfs.ext4 /dev/sdb1
```

or

```
#mkfs -t ext4 /dev/sdb1
```

## 6. For mount disk partition

```
#mkdir /data
```

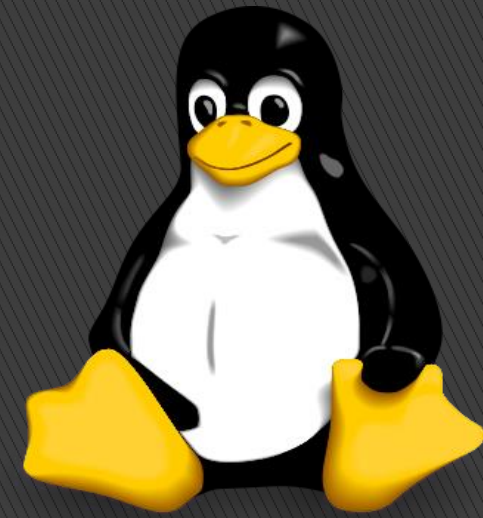
```
#mount /dev/sdb1 /data
```

## 7. For permanent mount disk partition

```
#vim /etc/fstab
```

```
/dev/sdb1 /data ext4 defaults 0 0
```

```
:wq
```



# For Create Disk Partitioning

For mount all partition listed in fstab file

```
#mount -a
```

For show mounted partition

```
#mount
```

Or

```
#df -h
```

