

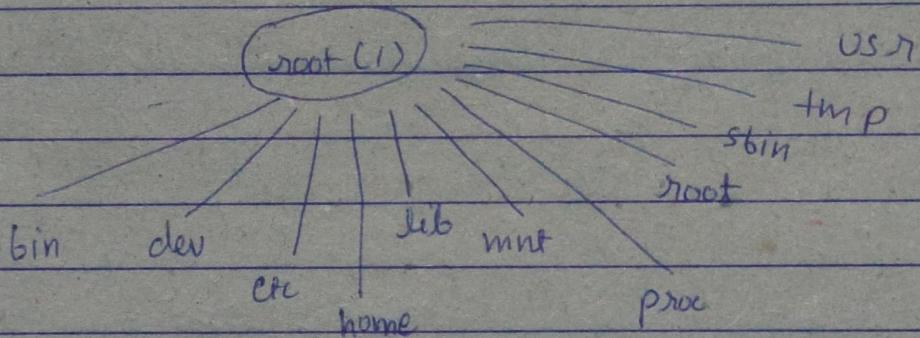
Linux System Admin

Unit 1

Unix file system is a logical method of storing and organizing a large amount of data in a way that makes it easy to manage.

It stores the file in tree like structure.

All data in unix is organized into files. All files are organized into directory.



Type of files

↳ ordinary file :- It contain data, text etc

↳ Directories :- They store files (ordinary and special.)

↳ Special files :- use to represent real hardware devices

↳ Pipe :- Act as temporary file which hold data from one command.

- ↳ socket :- This file is used for advance inter process communication.
- ↳ symbolic link :- link to other file

File system check and repair (fsck)

The 'fsck' linux utility check filesystem for error or outstanding issue. This tool is used to fix potential error and generate report

Syntax : fsck <options> <filesystem>

eg: fsck /dev/sda

fsck -N /dev/sda ⇒ dry run

fsck -y /dev/sda ⇒ fix error automatically

fsck -n /dev/sda ⇒ skip repair but print output

fsck -f /dev/sda ⇒ do filesystem check

Partition : It is a section of harddisk that is separate from other segments.

It allows user to divide physical disk into logical sections

command : parted or cfdisk

Swap : Swap is a substitute of RAM. It is a partition in linux that is used when the Ram fills up.

Type : Swap partition
Swap files

Command : mkswap \Rightarrow create swap
swapon \Rightarrow mount swap

Device files

Device file is a special type of file that is interfaced to a device driver.

It appears in a file system as an ordinary file.
They are in ' /dev ' directory.

Block file

+ is special file that provide buffered access to a hardware device.

Raw file

eg:- hello world \Rightarrow non raw
hello\lt world\n \Rightarrow Raw

Create partition \Rightarrow parted, cfdisk
format partition \Rightarrow mkfs.ext4 /dev/sda

Superblock

When a partition or disk is formatted, the sector in Buddhi hardisk is first divided into small groups these are called blocks.

Superblock is metadata of file system, it stores critical info about filesystem, it also stores critical configuration of filesystem

Superblock info :

- (1) Blocks in file system
 - (2) Free blocks
 - (3) Inode per block group
 - (4) Block per block group
 - (5) times file system was mounted
 - (6) Mount time
 - (7) UUID
 - (8) write time
 - (9) File system state
 - (10) File system type
 - (11) OS in which FS was formatted

Command: `dumpe2fs -h /dev/sda` \Rightarrow view superblocks

I Nodes

inode is an index node , it serves as specific unique identifier for a specific piece of metadata on a given filesystem . Inode is unique identifier for every file and directory in file system.

It contain :-

- ① File type
- ② Permissions
- ③ Owner ID
- ④ Group ID
- ⑤ Size of file
- ⑥ Time last accessed
- ⑦ Time last modified
- ⑧ Soft / Hard links
- ⑨ Access control list
- ⑩

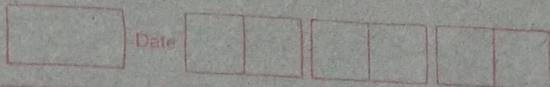
Check inode of file

stat <filename>

Check inode usage

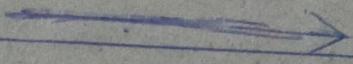
df -i

Mounting file system → Mount



Logical Volume

Network File System (NFS)



The network file system is a mechanism for storing files on network. It is a distributed file system that allows user to access file and directories located on remote computer and treat those files and directories as if they were local.

It works on Remote procedure call. It was developed by Sun microsystem in 1980.

IProc

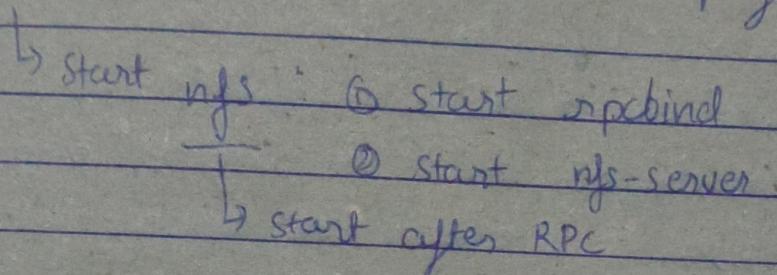
Some of the configuration tools of linux rely on 'Iproc' filesystem for communicating with the kernel, it permit access to kernel ~~more~~ runtime information to filesystem like mechanism.

mount it using editing /etc/fstab

or

\$ mount /proc

- It was developed by sun microsystem
- It use RPC
- linux package \Rightarrow nfs-utils, man pages

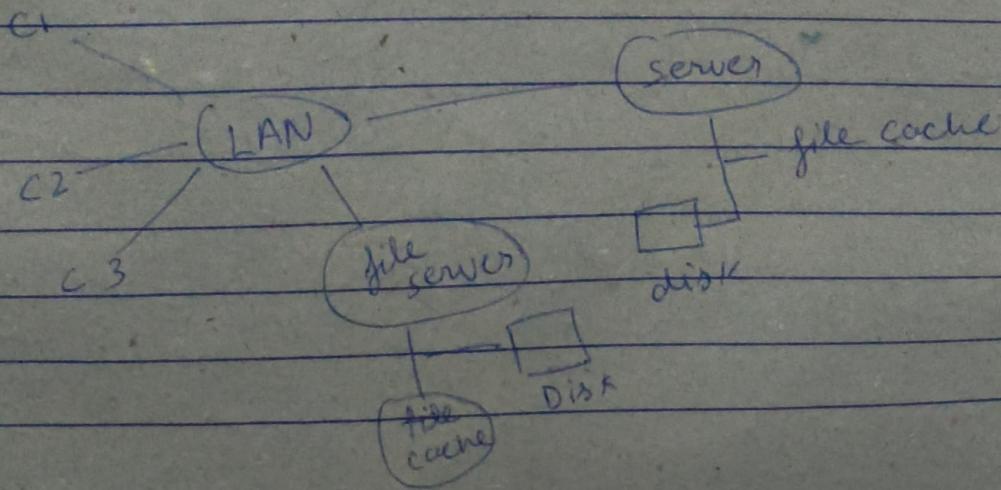


server

- \Rightarrow Set export directory in /etc/export \Rightarrow share who (perm)
- \Rightarrow give export permission
- \Rightarrow 'exportfs' command to start exporting.
- \Rightarrow allow in firewall

client

- \Rightarrow start mounted service
- \Rightarrow mount using \Rightarrow mount REMOTE:SHARE MOUNTPOINT
- \Rightarrow mount on Start by editing /etc/fstab



Active directory

It is Microsoft's proprietary directory service. It runs on Windows Server and enables administrators to manage permissions and access to network resources.

It stores data as an object. It is a way of organizing file and it is accessed using LDAP (Lightweight Directory Access Protocol).

Connect Linux to Active directory

↳ package : ~~realm~~ Realm

command : realm join -user=[user account] [domain name]

↳ realm list ⇒ display current status of server

↳ leave server ⇒ realm leave

OR

↳ sssd

↳ config : /etc/sssd/sssd.conf