File Handling Utilities

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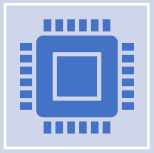
Outline

- Operations for filesystem management
- Creating partitions using fdisk
- Formatting the partitions
- Mounting the Filesystem
- Checking and repairing the partitions
- Q & A

Operations for Filesystem Management

Disk is *partitioned* to have a filesystem on it.

The partition can be an entire disk or its subset.



After partitioning, the partitions are *formatted* so that Linux can use it

Checking and repairing a corrupted filesystem due to power loss/application lookup and system conflict

Disk Partitioning using fdisk

- Creating disk partitions using fdisk utility
  - $ fdisk /dev/sdb
    - Unable to open /dev/sdb
    - $
  - $ sudo fdisk /dev/sdb
    - sudo] password for vimal:
    - Device contains neither a valid DOS partition table,
    - nor Sun, SGI or OSF disklabel
    - Building a new DOS disklabel with disk identifier 0xd3f759b5.
    - Changes will remain in memory only
    - until you decide to write them.
    - After that, of course, the previous content won't be recoverable.
    - Warning: invalid flag 0x0000 of partition table 4 will
    - be corrected by w(rite)
    - [...]
    - Command (m for help):

TABLE 8-2 The fdisk Commands

Command	Description
a	Toggles a flag indicating if the partition is bootable
b	Edits the disklabel used by BSD Unix systems
c	Toggles the DOS compatibility flag
d	Deletes the partition
l	Lists the available partition types
m	Displays the command options
n	Adds a new partition
o	Creates a DOS partition table
p	Displays the current partition table
q	Quits without saving changes
s	Creates a new disklabel for Sun Unix systems
t	Changes the partition system ID
u	Changes the storage units used
v	Verifies the partition table
w	Writes the partition table to the disk
x	Advanced functions

Creating a Filesystem

Before you can store data on the partition, you must *format* it with a filesystem so Linux can use it.

Each filesystem type uses its *own command line program to format partitions.*

Creating a filesystem

- Formatting of filesystem partitions

TABLE 8-3 Command Line Programs to Create Filesystems

Utility	Purpose
mkefs	Creates an ext filesystem
mke2fs	Creates an ext2 filesystem
mkfs.ext3	Creates an ext3 filesystem
mkfs.ext4	Creates an ext4 filesystem
mkreiserfs	Creates a ReiserFS filesystem
jfs_mkfs	Creates a JFS filesystem
mkfs.xfs	Creates an XFS filesystem
mkfs.zfs	Creates a ZFS filesystem
mkfs.btrfs	Creates a Btrfs filesystem

```
$ type mkfs.ext4
mkfs.ext4 is /sbin/mkfs.ext4
$
$ type mkfs.btrfs
-bash: type: mkfs.btrfs: not found
$
```

Mounting the Filesystem

After you create the filesystem for a partition, the next step is to mount it on a virtual directory mount point so you can store data in the new filesystem.

You can mount the new filesystem anywhere in your virtual directory where you need the extra space.

```
$ ls /mnt
$
$ sudo mkdir /mnt/my_partition
$
$ ls -al /mnt/my_partition/
$
$ ls -dF /mnt/my_partition
/mnt/my_partition/
$
$ sudo  mount -t ext4  /dev/sdb1  /mnt/my_partition
$
$ ls -al /mnt/my_partition/
total 24
drwxr-xr-x. 3 root root  4096 Jun 11 09:53 .
drwxr-xr-x. 3 root root  4096 Jun 11 09:58 ..
drwx------. 2 root root 16384 Jun 11 09:53 lost+found
$
```

Checking and Repairing a Filesystem

The fsck command is used to check and repair most Linux filesystem types- ext, ext2, ext3, ext4, Reiser4, JFS, and XFS.

The format of the command is:

- fsck *options filesystem*

Filesystems can be referenced using either the device name, the mount point in the virtual directory, or a special Linux UUID value assigned to the filesystem.

The fsck command uses the /etc/fstab file to automatically determine the filesystem on a storage device that's normally mounted on the system.

If the storage device isn't normally mounted (such as if you just created a filesystem on a new storage device), you need to use the -t command line option to specify the filesystem type.

Checking and Repairing a Filesystem

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TABLE 8-4 The fsck Command Line Options

Option	Description
`-a`	Automatically repairs the filesystem if errors are detected
`-A`	Checks all the filesystems listed in the /etc/fstab file
`-C`	Displays a progress bar for filesystems that support that feature (only ext2 and ext3)
`-N`	Doesn't run the check, only displays what checks would be performed
`-r`	Prompts to fix if errors found
`-R`	Skips the root filesystem if using the -A option
`-s`	If checking multiple filesystems, performs the checks one at a time
`-t`	Specifies the filesystem type to check
`-T`	Doesn't show the header information when starting
`-V`	Produces verbose output during the checks
`-y`	Automatically repairs the filesystem if errors detected

Thanks

Q & A