File System

Linux fsck utility is used to check and repair Linux filesystems ([ext2, ext3, ext4](https://www.thegeekstuff.com/2011/05/ext2-ext3-ext4/), etc.).

Depending on when was the last time a file system was checked, the system runs the fsck during boot time to check whether the filesystem is in consistent state. System administrator could also run it manually when there is a problem with the filesystems.

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### 1. Filesystem Check on a Disk Partition

First, view all the available partitions on your system using [parted command](https://www.thegeekstuff.com/2011/09/parted-command-examples/) as shown below.

# parted /dev/sda 'print'

Number Start End Size Type File system Flags

1 1049kB 106MB 105MB primary fat16 diag

2 106MB 15.8GB 15.7GB primary ntfs boot

3 15.8GB 266GB 251GB primary ntfs

4 266GB 500GB 234GB extended

5 266GB 466GB 200GB logical ext4

6 467GB 486GB 18.3GB logical ext2

7 487GB 499GB 12.0GB logical fat32 lba

You can check a specific filesystem (for example: /dev/sda6) as shown below.

# fsck /dev/sda6

fsck from util-linux 2.20.1

e2fsck 1.42 (29-Nov-2011)

/dev/sda6: clean, 95/2240224 files, 3793506/4476416 blocks

The following are the possible [exit codes](https://www.thegeekstuff.com/2010/03/bash-shell-exit-status/) for fsck command.

* 0 – No errors
* 1 – Filesystem errors corrected
* 2 – System should be rebooted
* 4 – Filesystem errors left uncorrected
* 8 – Operational error
* 16 – Usage or syntax error
* 32 – Fsck canceled by user request
* 128 – Shared-library error

### 2. Fsck Command Specific to a Filesystem Type

fsck internally uses the respective filesystem checker command for a filesystem check operation. These fsck checker commands are typically located under /sbin.

The following example show the various possible fsck checker commands (for example: fsck.ext2, fsck.ext3, fsck.ext4, etc.)

# cd /sbin

# ls fsck\*

fsck fsck.cramfs fsck.ext2 fsck.ext3 fsck.ext4 fsck.ext4dev fsck.minix fsck.msdos fsck.nfs fsck.vfat

fsck command will give you an error when it doesn’t find a filesystem checker for the filesystem that is being checked.

For example, if you execute fsck over a ntfs partition, you’ll get the following error message. There is no fsck.ntfs under /sbin. So, this gives the following error message.

# fsck /dev/sda2

fsck from util-linux 2.20.1

fsck: fsck.ntfs: not found

fsck: error 2 while executing fsck.ntfs for /dev/sda2

### 3. Check All Filesystems in One Run using Option -A

You can check all the filesystems in a single run of fsck using this option. This checks the file system in the order given by the fs\_passno mentioned for each filesystem in /etc/fstab.

Please note that the filesystem with a fs\_passno value of 0 are skipped, and greater than 0 are checked in the order.

The /etc/fstab contains the entries as listed below,

# cat /etc/fstab

##

proc /proc proc nodev,noexec,nosuid 0 0

## / was on /dev/sda5 during installation

/dev/sda5 / ext4 errors=remount-ro 0 1

## /mydata was on /dev/sda6 during installation

/dev/sda6 /mydata ext2 defaults 0 2

## /backup was on /dev/sda7 during installation

/dev/sda7 /backup vfat defaults 0 3

Here, the filesystem with the same fs\_passno are checked in parallel in your system.

# fsck -A

It is recommended that you exclude the root filesystem during this global check by adding -R option as shown below.

# fsck -AR -y

fsck from util-linux 2.20.1

e2fsck 1.42 (29-Nov-2011)

/dev/sda6: clean, 95/2240224 files, 3793506/4476416 blocks

dosfsck 3.0.12, 29 Oct 2011, FAT32, LFN

/dev/sda7: 8 files, 50/1463400 clusters

Note: Option -y is explained in one of the examples below.

### 4. Check Only a Specific Filesystem Type using Option -t

Using fsck -t option, you can specify the list of filesystem to be checked. When you are using with option -A, the fsck will check only the filesystem mentioned with this option -t. Note that fslist is a comma separated values.

Now, pass ext2 as the fslist value to -t option as shown below:

# fsck -AR -t ext2 -y

fsck from util-linux 2.20.1

e2fsck 1.42 (29-Nov-2011)

/dev/sda6: clean, 11/2240224 files, 70327/4476416 blocks

In this example, /dev/sda6 is the only partition created with the filesystem ext2, thus it get checked accordingly.

Using the keyword ‘no’ in front of filesystem, you can check all other filesystem types except a particular filesystem.

In the following example, ext2 filesystem is excluded from the check.

# fsck -AR -t noext2 -y

fsck from util-linux 2.20.1

dosfsck 3.0.12, 29 Oct 2011, FAT32, LFN

/dev/sda7: 0 files, 1/1463400 clusters