

RHEL: Extending the maximum inode count on a ext2/ext3/ext4 filesystem

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Tested on RHEL 6 & 7

An inode is a data structure that contains information about a file or directory. Inodes

rarely get used up when the file system has available space.

Nevertheless, this may

happen when there is a large amount of small files or empty files because each file or

directory will use an inode.

Once the filesystem created it is not possible to modify the number of inodes so one

should carefully decide the correct value for this parameter.

In addition, we should take into account that the value of bytes per inode shouldn't be

smaller than the blocksize of the filesystem, otherwise there will be more inodes on the

filesystem than those that will be ever used.

Inode number may be set by specifying the total number of inodes during filesystem

creation, "-N", or by indicating a bytes/inode ratio, "-i".

For a small logical volume like following one:

```
lvs /dev/rootvg/lv_test
```

```
LV      VG      Attr      LSize
lv_test rootvg -wi-a----- 512.00m
```

```
# I'll create a ext3 filesystem using different bytes/inode ratio.
Pay attention to the
# space "lost" on the filesystem for inode purposes:
```

```
mkfs.ext3 /dev/rootvg/lv_test
```

```
mke2fs 1.41.12 (17-May-2010)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
32768 inodes, 131072 blocks
6553 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=134217728
4 block groups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
Superblock backups stored on blocks:
    32768, 98304
```

```
df -h /test
```

```
Filesystem                Size  Used Avail Use% Mounted on
/dev/mapper/rootvg-lv_test
                           504M   17M  462M   4% /test
```

```
mkfs.ext3 -i 4096 /dev/rootvg/lv_test
```

```
mke2fs 1.41.12 (17-May-2010)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
```

```
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
131072 inodes, 131072 blocks
6553 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=134217728
4 block groups
32768 blocks per group, 32768 fragments per group
32768 inodes per group
Superblock backups stored on blocks:
    32768, 98304
```

df -h /test

Filesystem	Size	Used	Avail	Use%	Mounted on
/dev/mapper/rootvg-lv_test					
	480M	17M	438M	4%	/test

mkfs.ext3 -i 1024 /dev/rootvg/lv_test

```
mke2fs 1.41.12 (17-May-2010)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
524288 inodes, 131072 blocks
6553 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=135272448
16 block groups
8592 blocks per group, 8592 fragments per group
32768 inodes per group
Superblock backups stored on blocks:
    8592, 25776, 42960, 60144, 77328
```

df -h /test

Filesystem	Size	Used	Avail	Use%	Mounted on
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/dev/mapper/rootvg-lv_test

384M 19M 340M 6% /test

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