

# Map LBA to File

You might see something like this on your console / dmesg:

```
[ 394.051961] end_request: I/O error, dev sda, sector 128999424
[ 394.055674] Buffer I/O error on device sda3, logical block 8800768
```

In this situation you can use the following assumptions: \* The bad sector / LBA is 128999424 (L) \* The bad block is 8800768 in the filesystem on sda3 (b)

## How to:

For this example, I'll be using the following information. The second line of the output above was not provided, we need to calculate the logical block offset first.

**Bad LBA = 0x0a8ae67d = 176875133**

### Find out the partition

```
$ sudo fdisk -lu /dev/sda
```

```
Disk /dev/sda: 500.1 GB, 500107862016 bytes
255 heads, 63 sectors/track, 60801 cylinders, total 976773168 sectors
Units = sectors of 1 * 512 = 512 bytes
Disk identifier: 0x030818eb
```

Device	Boot	Start	End	Blocks	Id	System
/dev/sda1	*	63	409662	204800	83	Linux
/dev/sda2		409663	168181822	83886080	83	Linux
/dev/sda3		168181823	172376126	2097152	82	Linux swap / Solaris
/dev/sda4		172376127	976768064	402195969	83	Linux

Therefore this LBA is on partition: /dev/sda4

### Get block size of the partition

```
$ sudo tune2fs -l /dev/sda4 | grep Block
Block count:          100548992
Block size:           4096
Blocks per group:     32768
```

This partition has block size: 4096

## Calculate the block

```
b = (int)(((L-S)*512)/B)
```

where:

b = File System block number

B = File system block size in bytes

L = LBA of bad sector

S = Starting sector of partition as shown by `fdisk -lu`

Denotes the integer part (round it DOWN to a whole number).

```
b = (int)((176875133-172376127) * 512 / 4096)
```

```
b = (int)562375.75
```

```
b = 562375
```

The block on this partition corresponding to this LBA is: 562375

## Identify the file

Use `debugfs` to locate the inode stored in this block, and the file that contains that inode:

```
$ sudo debugfs
debugfs 1.41.9 (22-Aug-2009)
debugfs: open /dev/sda4
debugfs: testb 562375
Block 562375 marked in use
debugfs: icheck 562375
Block   Inode number
562375  132344
debugfs: ncheck 132344
Inode   Pathname
132344  /attie/banner.jpg
debugfs: quit
```

Or if the block appears not in use anymore:

```
$ sudo debugfs
debugfs 1.41.9 (22-Aug-2009)
debugfs: open /dev/sda4
debugfs: testb 562375
Block 562375 not in use
debugfs: quit
```

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