

VFS and RAID

Team Emertxe

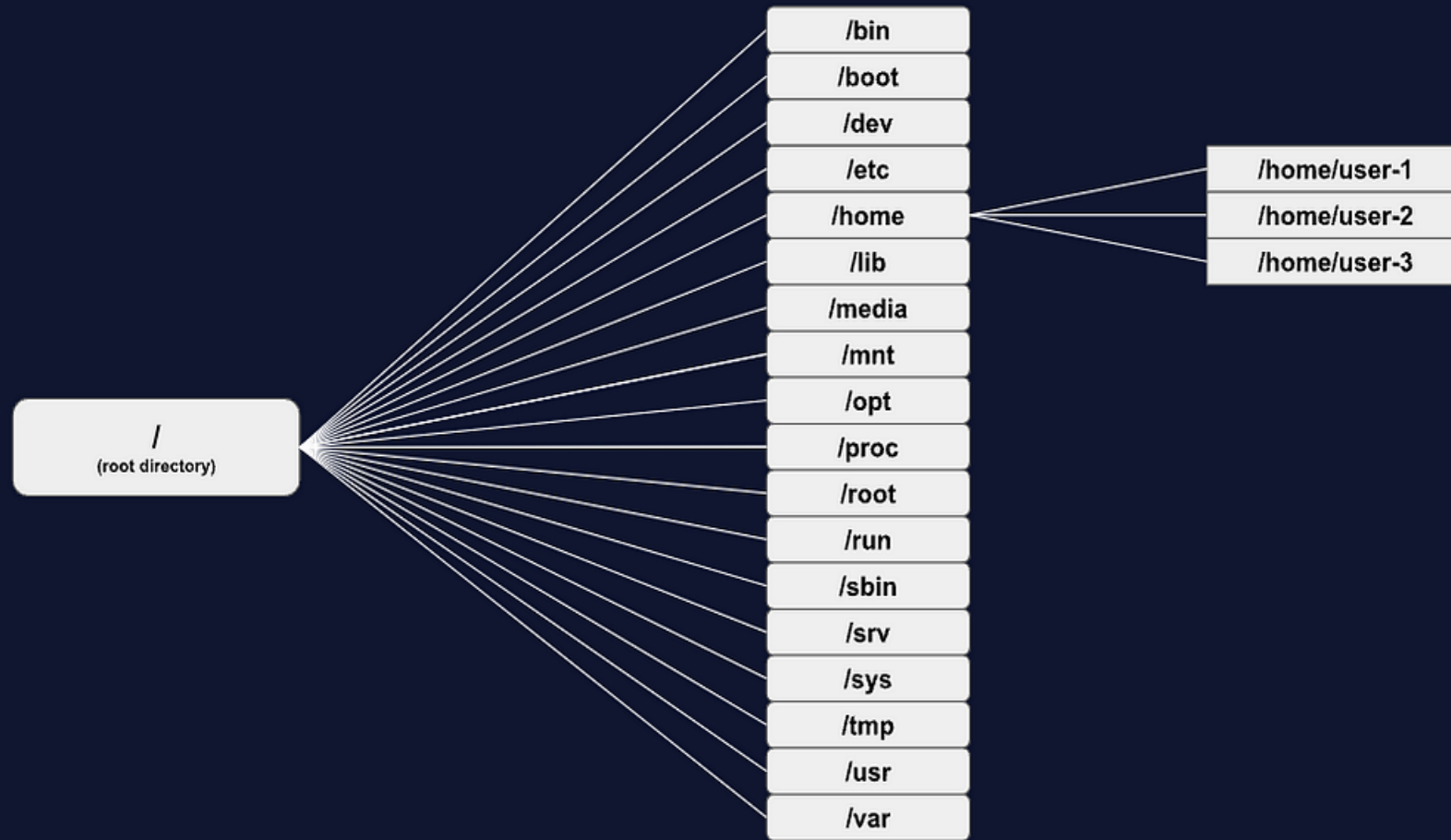


Topics

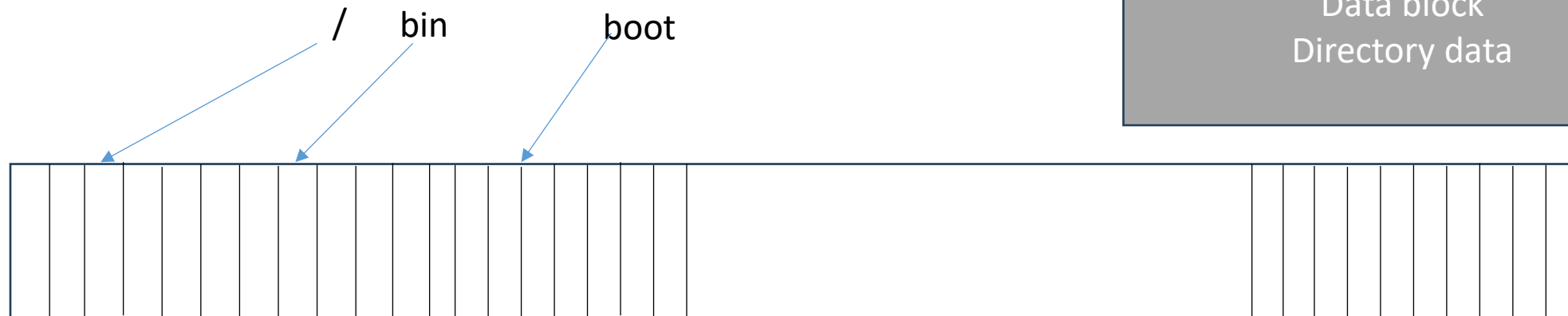
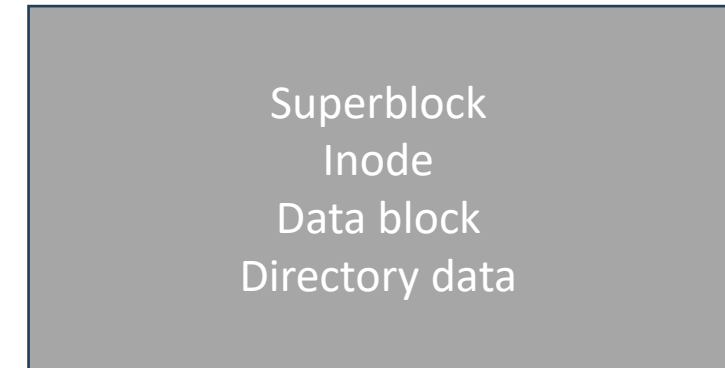


- VFS
- UNIX/EXT2 filesystem layout
- Block(RAID) Overview
- Troubleshooting (FSCK & mdadm)

Filesystem

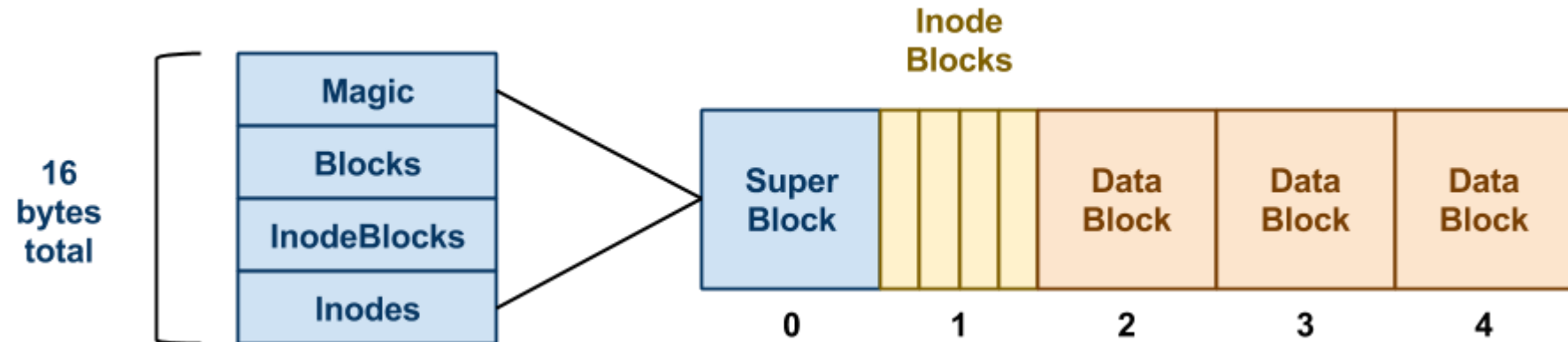


Filesystem



Hard disk

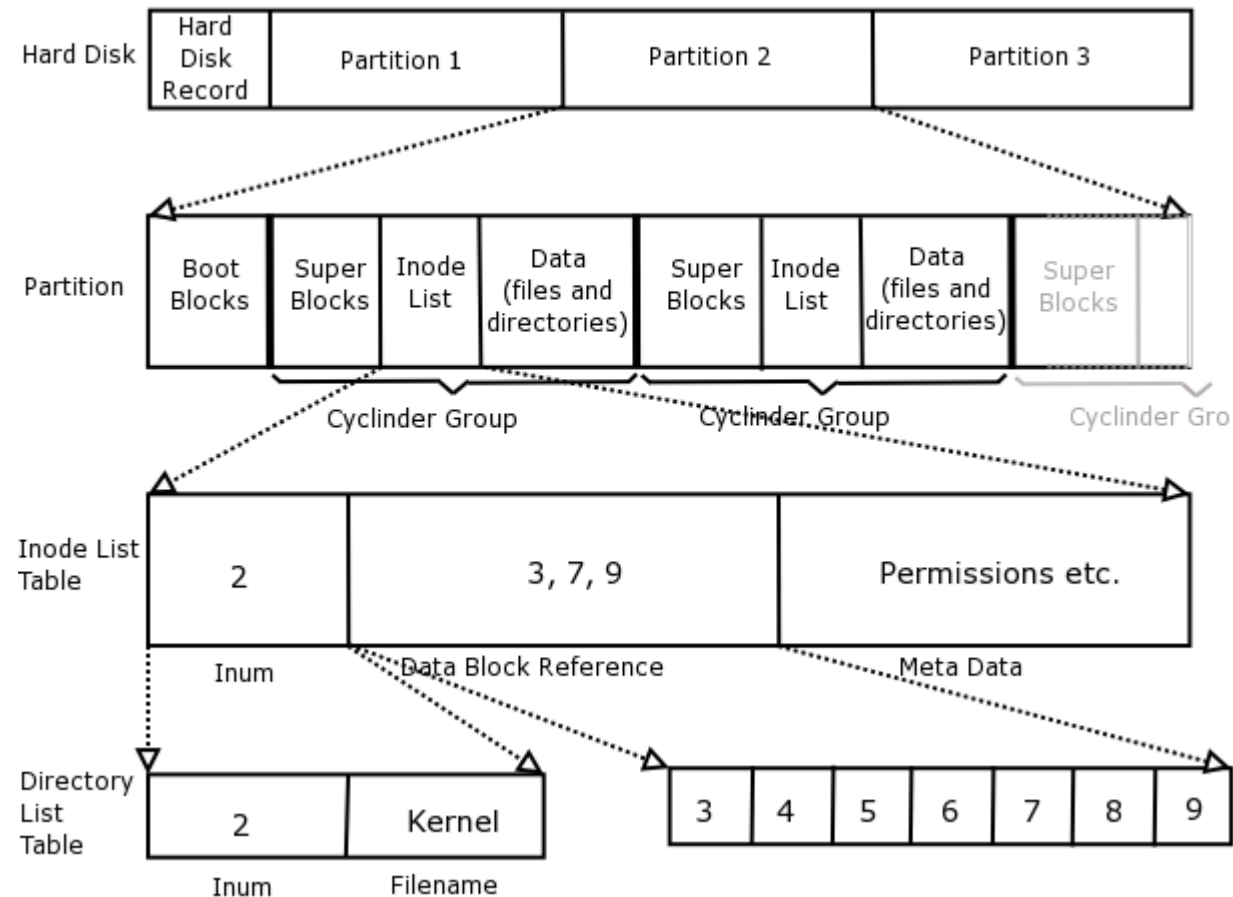
Filesystem



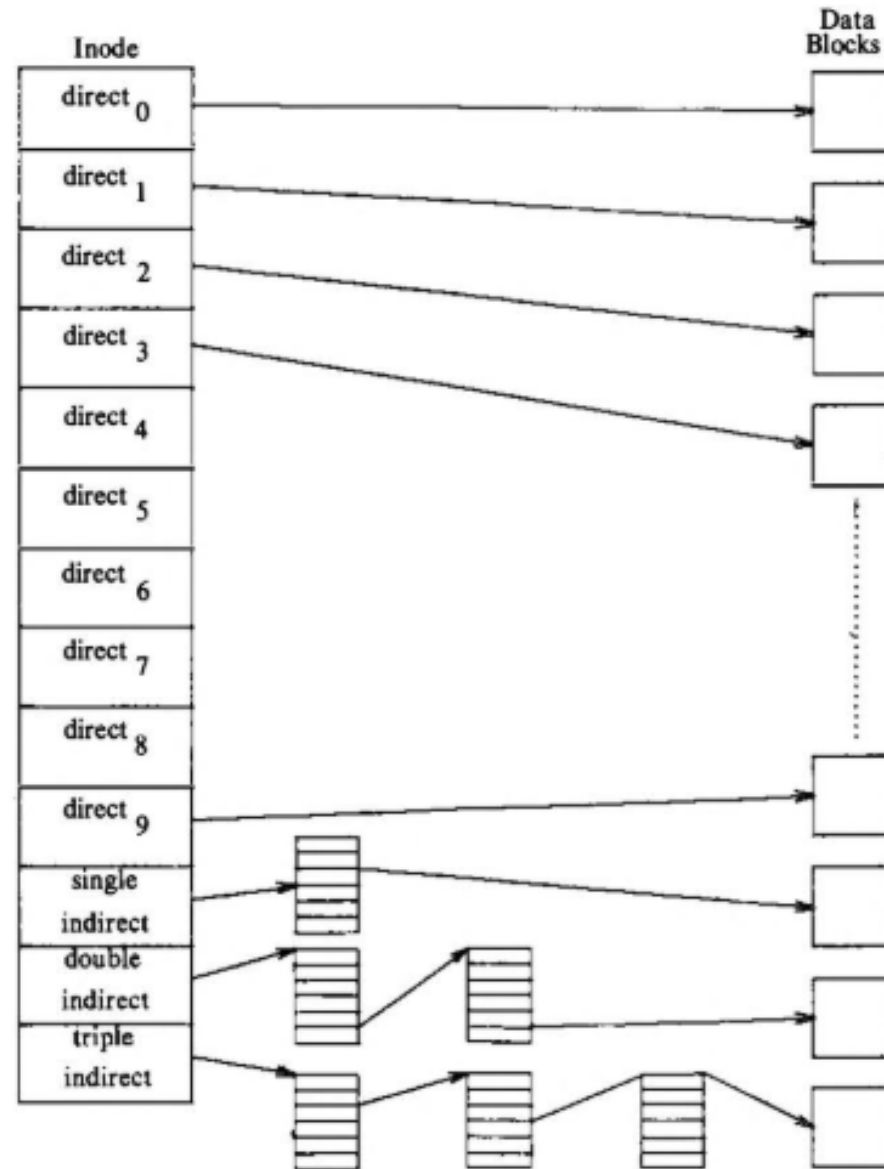
Filesystem



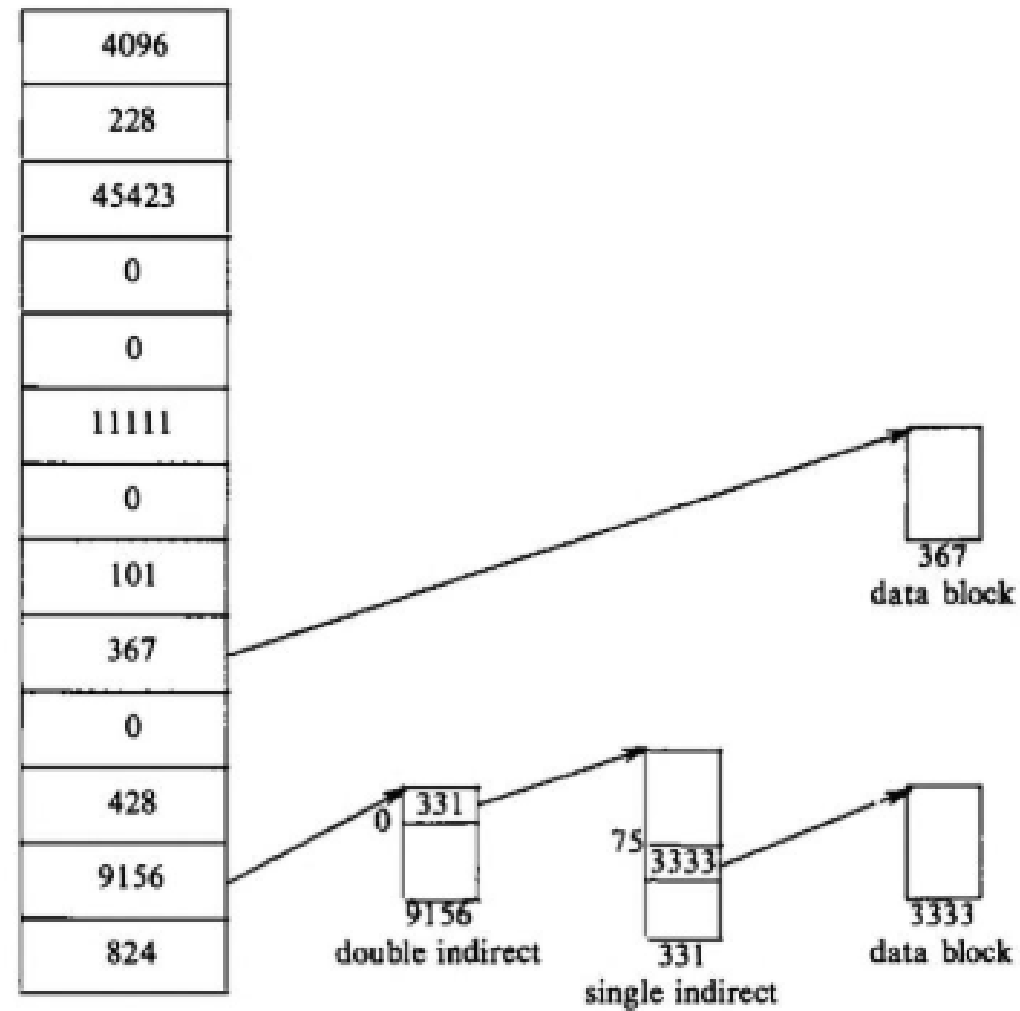
UNIX File System Layout



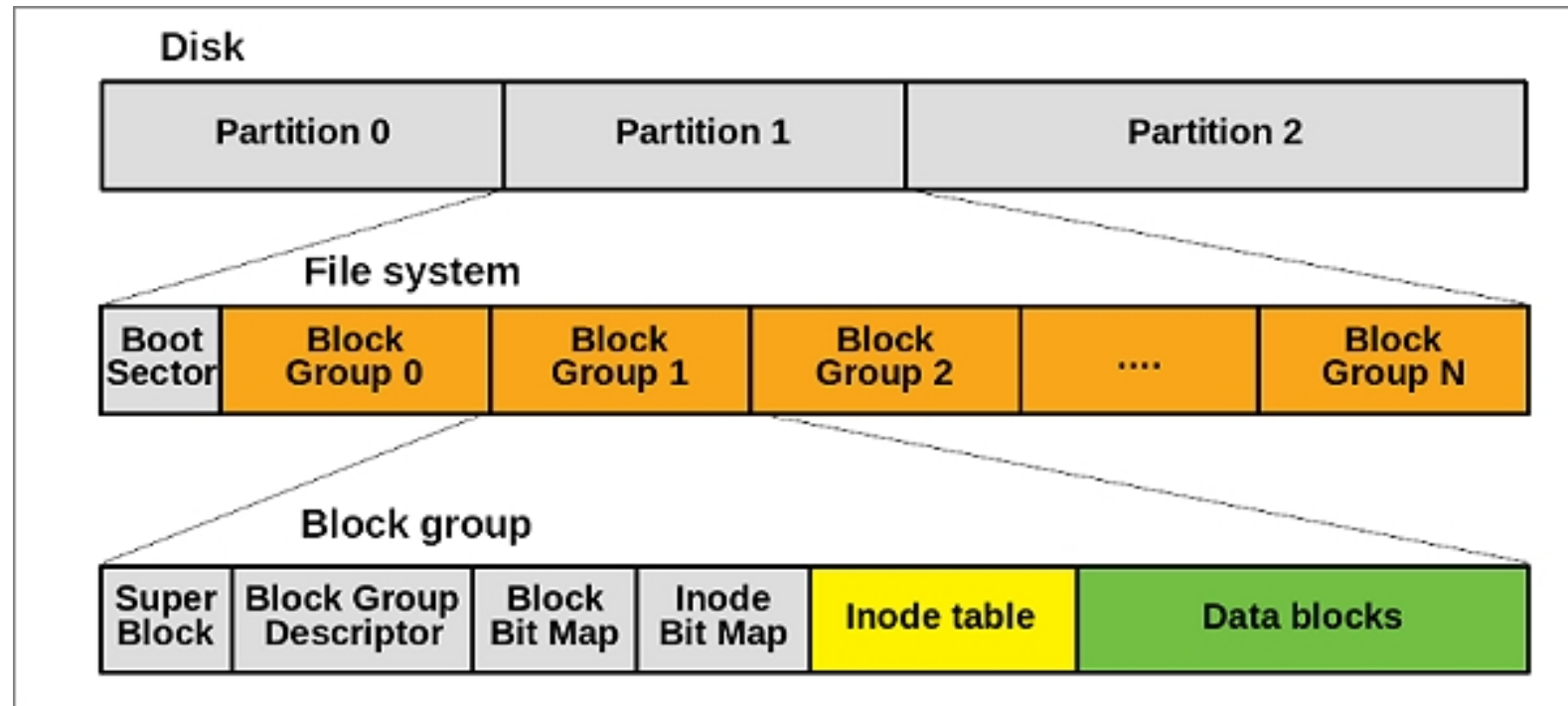
Filesystem



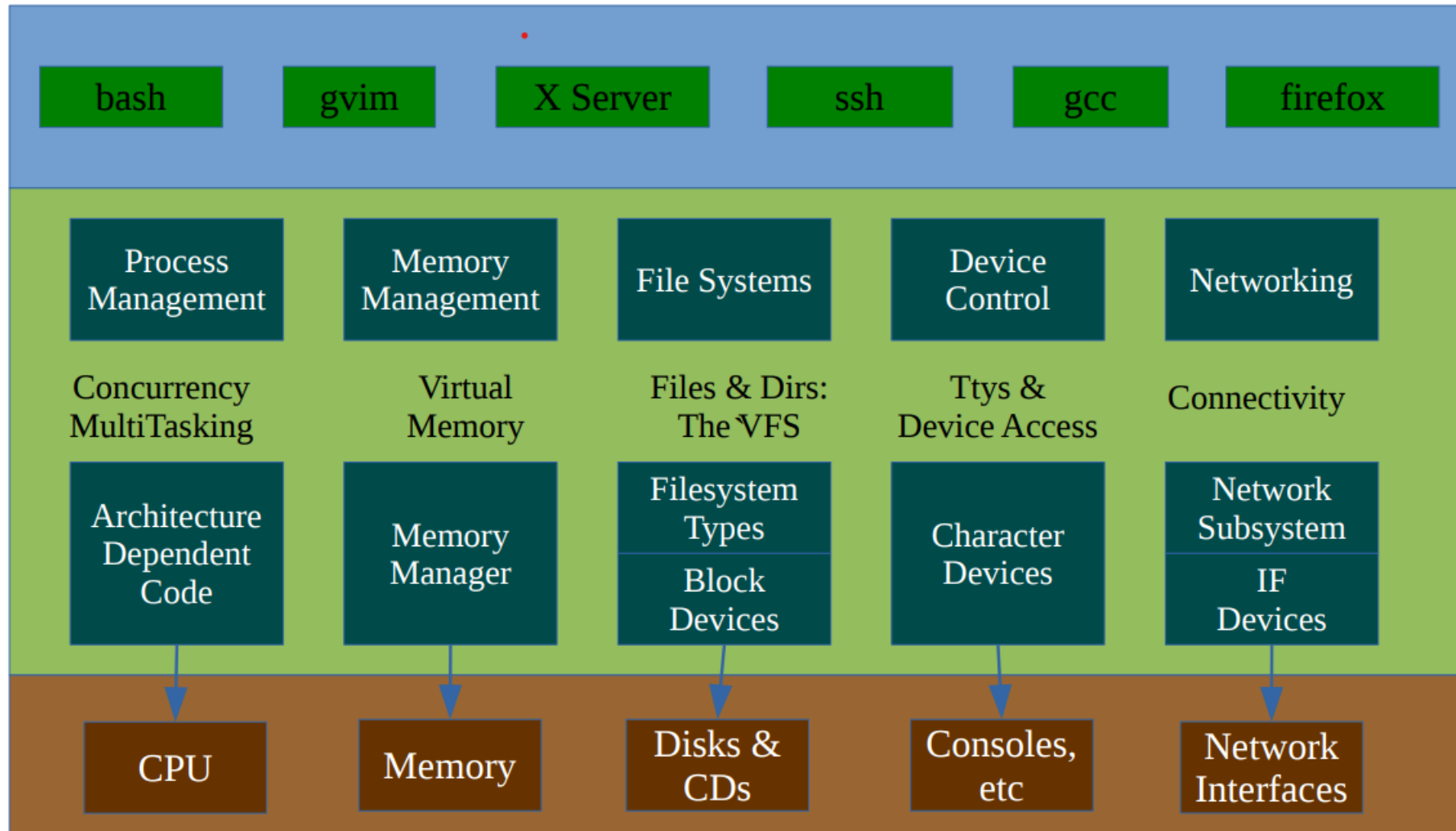
Filesystem



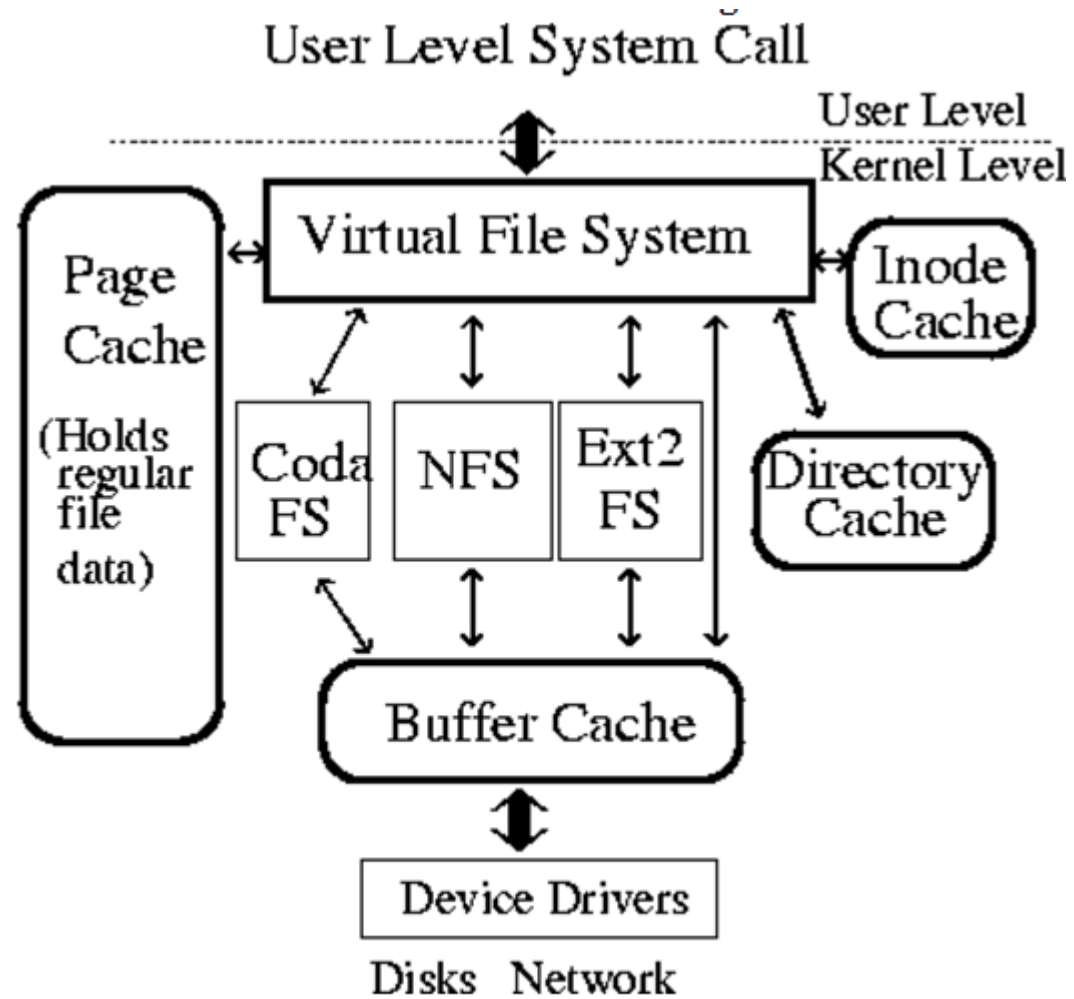
Filesystem EXT FS



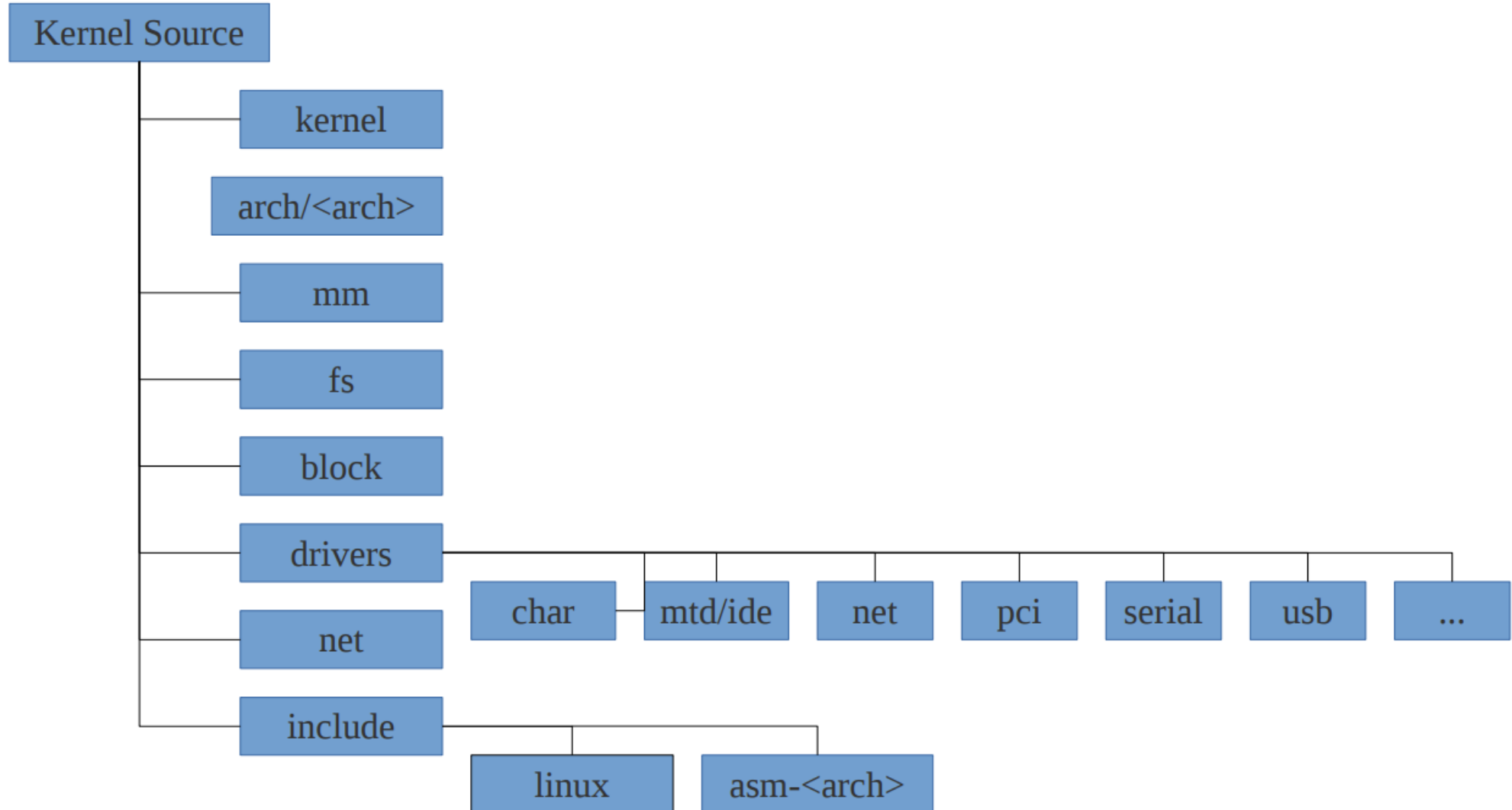
Linux Driver Ecosystem



VFS

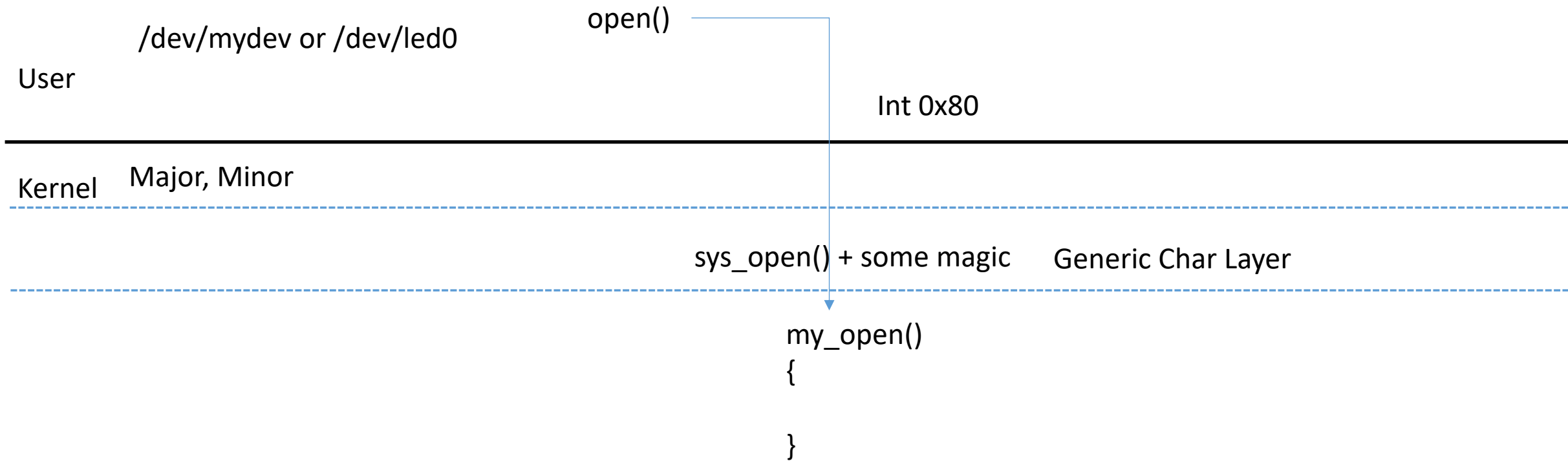


Kernel Source Organization



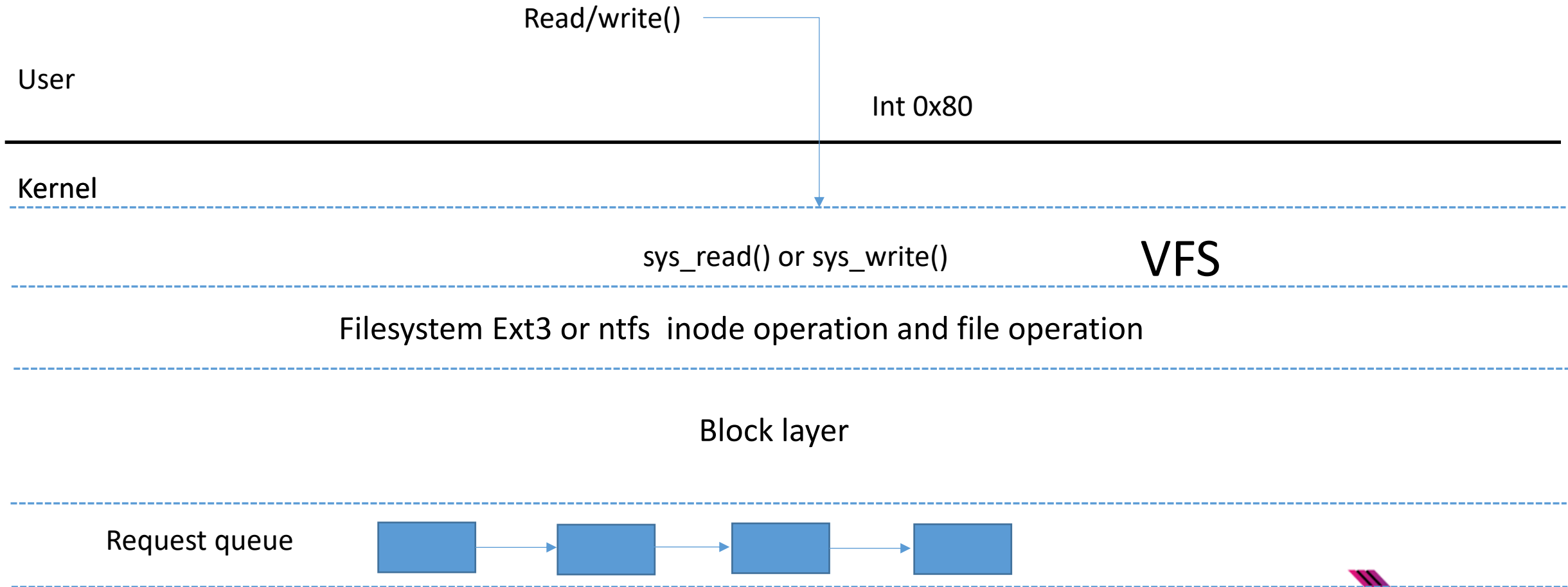
VFS and Block(RAID) Overview

Generic char driver



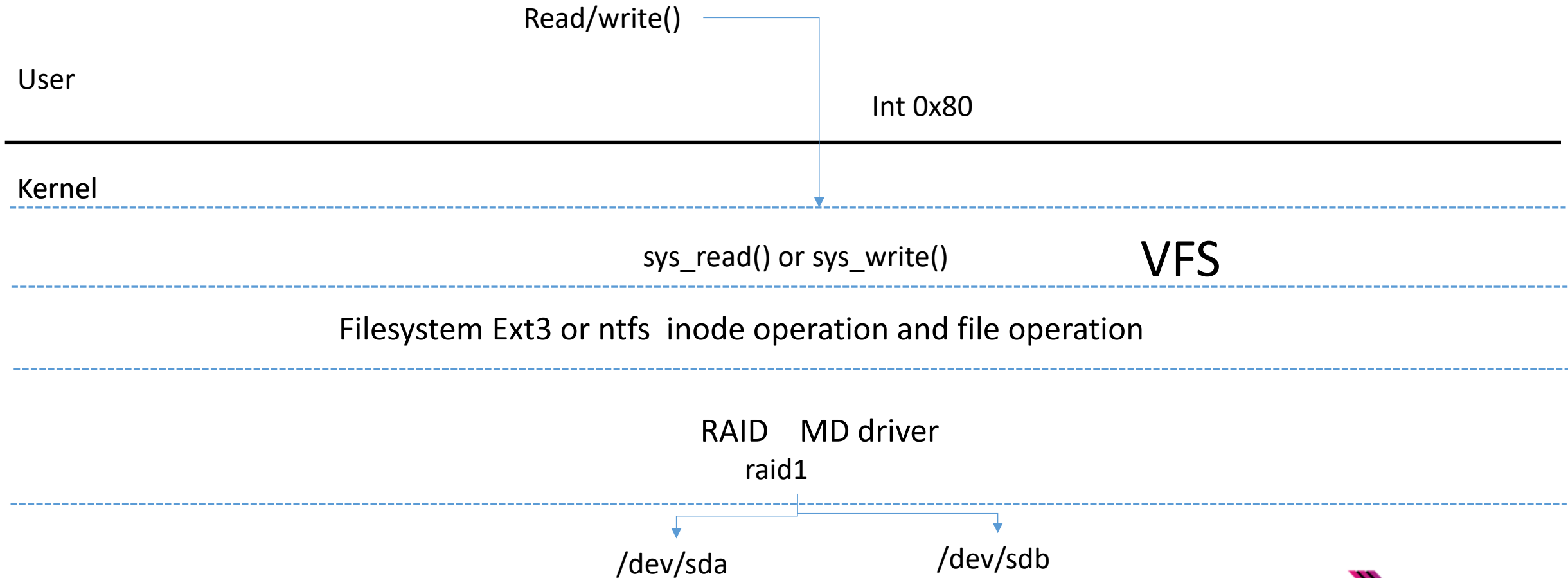
VFS and Block(RAID) Overview

Filesystem

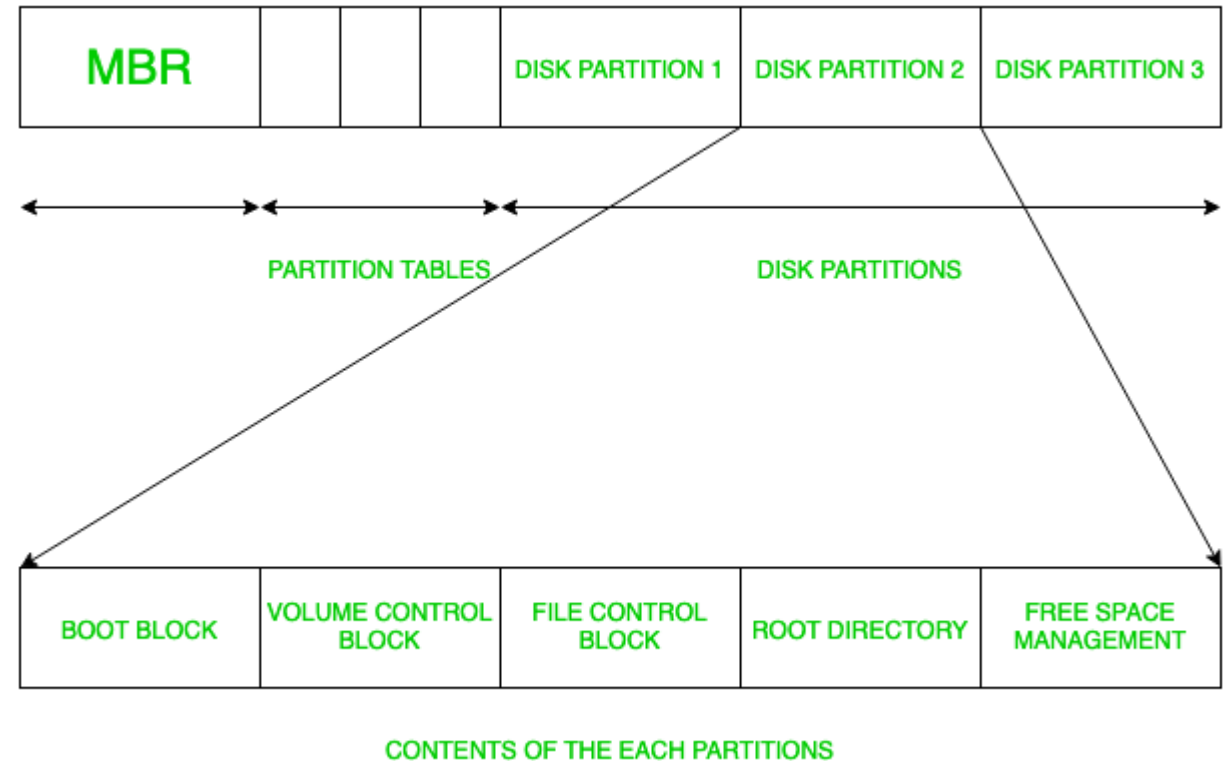
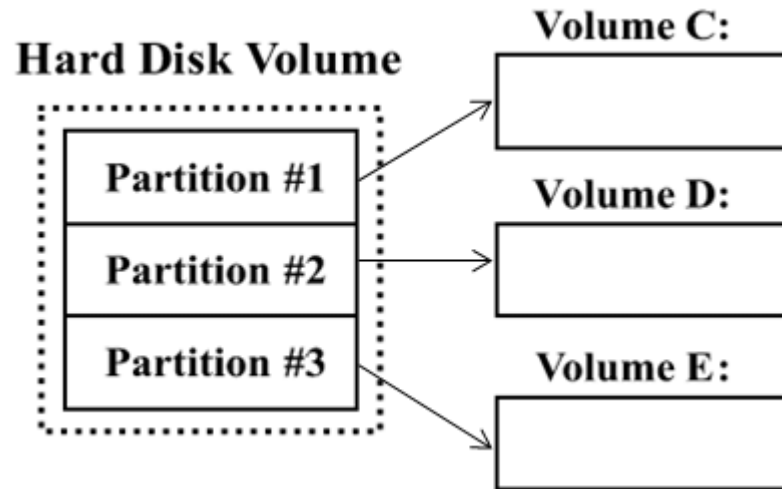


VFS and Block(RAID) Overview

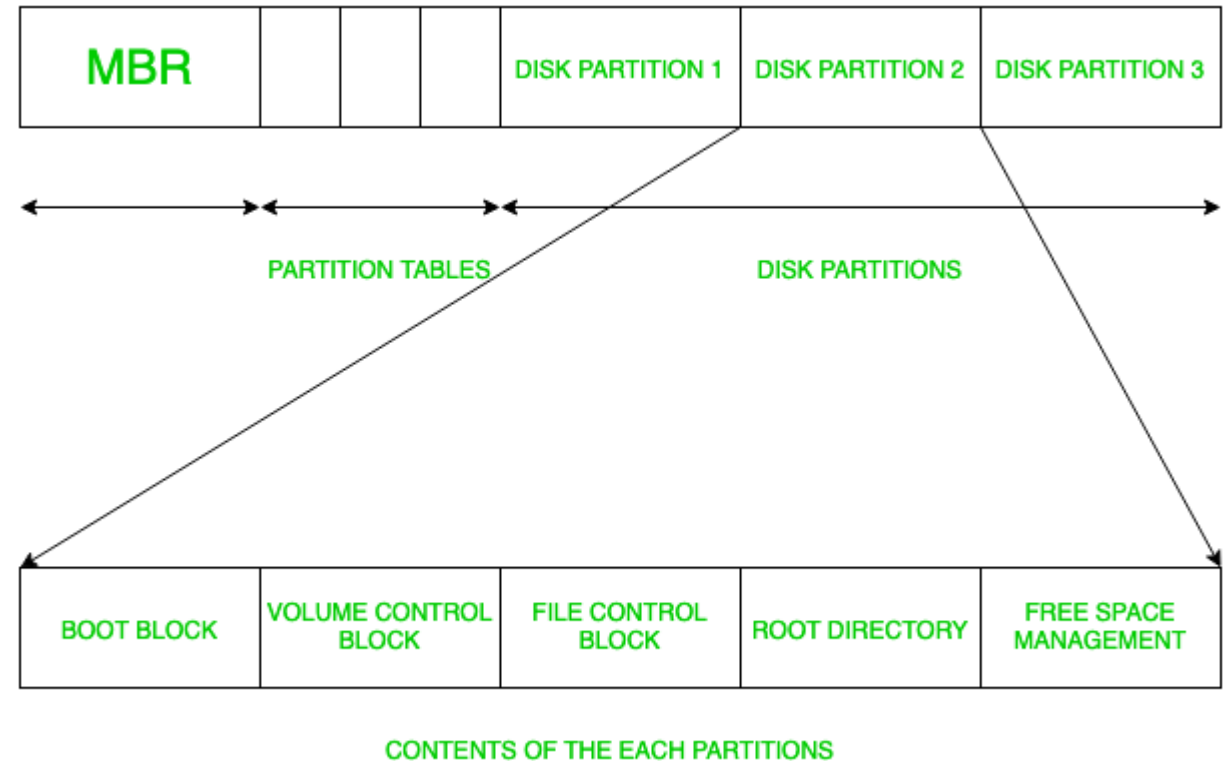
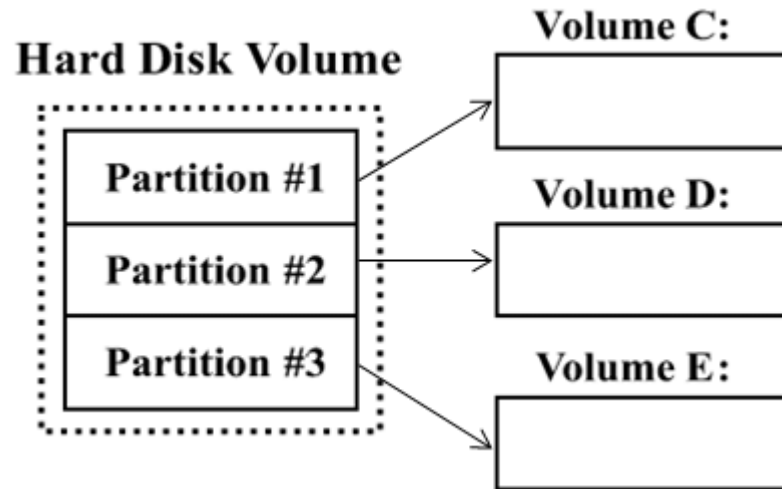
Filesystem



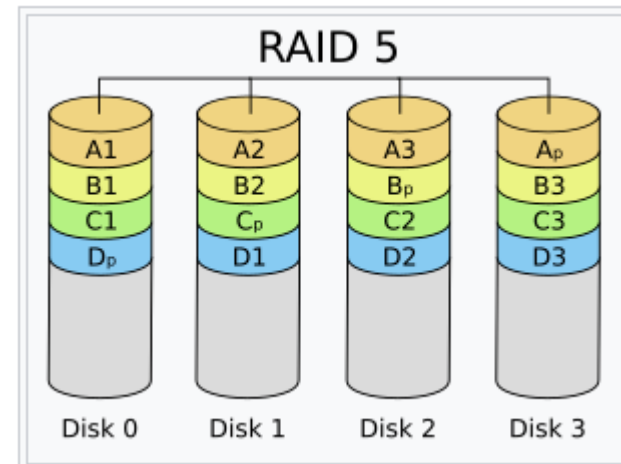
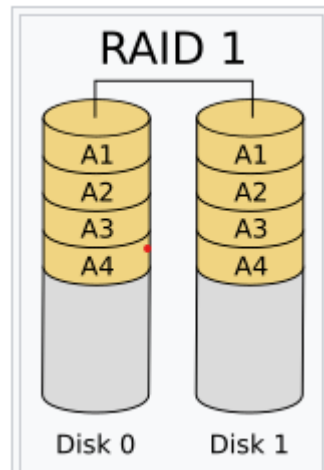
RAID



RAID



RAID



RAID



Hands-on using mdadm and fsck

Guess the Panic



```
[ 25.374622] i8042: No controller found
[ 25.377412] Kernel panic - not syncing: VFS: Unable to mount root fs on unknow
wn-block(0,0)
[ 25.379131] CPU: 0 PID: 1 Comm: swapper/0 Not tainted 3.10.0+2 #1
[ 25.380381] Hardware name: Cisco Systems Inc UCSB-B200-M4/UCSB-B200-M4, BIOS
B200M4.3.1.2b.0.042920161158 04/29/2016
[ 25.382560] ffff88017fbe0000 ffff880181a0dd48 ffffffff812ce2d9 ffff880181a0d
e58
[ 25.384224] ffffffff81053592 0000000300000000 ffff880181a0de68 ffff880181a0d
d88
[ 25.385894] ffffffff813afbee ffff880181a0de58 ffffffff81b0ce91 00000003000000
008
[ 25.387571] Call Trace:
[ 25.388077] [<ffffffff812ce2d9>] dump_stack+0x19/0x20
[ 25.389142] [<ffffffff81053592>] panic+0xf2/0x260
[ 25.390136] [<ffffffff813afbee>] ? class_dev_iter_exit+0xe/0x10
[ 25.391377] [<ffffffff81b0ce91>] ? printk_all_partitions+0x221/0x250
[ 25.392707] [<ffffffff81184ca7>] ? Sys_mount+0xb7/0xd0
[ 25.393784] [<ffffffff8116ea52>] ? path_put+0x22/0x30
[ 25.394845] [<ffffffff81ad062b>] mount_block_root+0x21b/0x2e0
[ 25.396044] [<ffffffff81ad0746>] mount_root+0x56/0x60
[ 25.397103] [<ffffffff81ad08a8>] prepare_namespace+0x158/0x190
[ 25.398325] [<ffffffff81acfd82>] kernel_init_freeable+0x1e2/0x200
[ 25.399600] [<ffffffff81acf870>] ? parse_early_options+0x30/0x30
[ 25.400862] [<ffffffff814f3210>] ? csum_partial_copy_generic+0x170/0x170
[ 25.402257] [<ffffffff814f321e>] kernel_init+0xe/0xe0
[ 25.403321] [<ffffffff8150f1ac>] ret_from_fork+0x7c/0xb0
[ 25.404430] [<ffffffff814f3210>] ? csum_partial_copy_generic+0x170/0x170
```