

Improving Reliability

with Log-Structured File system (LFS)
and Journaling File System (ext3)

What happen when power loss or system crash?

- ✓ Sectors (but not a block) are **written atomically** by the hard drive device
- ⦿ But an FS operation might modify several sectors
 - modify metadata blocks (free bitmaps and inodes)
 - modify data blocks
- ➡ Crash-consistency problem
a crash has a high chance of corrupting the file system