

All File Systems Are Not Created Equal: On the Complexity of Crafting Crash-Consistent Application

In many systems such as file system, database and key-value stores, to recover after crash, crash consistency is a very important. For crash consistency, systems are using many techniques like journaling, copy-on-write, and soft updates. File system focuses to the metadata consistency. However, directories does not contain valid directory entries always. Also, user level applications depend on file system's behavior to get a crash consistency. Therefore, many application's protocol can be complex and have a probability of weakness. For this problem, Authors suggested methodology which is called block-order breaker(BOB). Furthermore, Authors implemented a tool which help to find application's vulnerabilities from crash.