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NOVA, 2017 in Linux

Non-Volatile memory accelerated is a file system that uses a log-structured system. This means that data and metadata are written to a circular buffer (log). NOVA specifies in performance and atomicity. It also specifies in Copy-On-Write, Journaling, Metadata protection and Data Protections. This file system is open source unlike exFAT (Focused on SDs) or GFS (Focused on it's search engine). NOVA is only developed to work with Linux file systems. One of the issues that come from the file system is that infrequent data can become corrupt as the system heavily relies on a spatial method of keeping data around and leading to some data having a chance of being corrupt if not opened for long enough. The idea of NOVA is easier to understand when you relate it to cache memory as demonstrated in some of the sources in our references.

NOVA is known for it's byte-addressable persistent memory for Linux. And as a Windows user, I have never heard of NOVA and can't wait to see how it's used in the future.

exFAT, 2006, in Windows

ExFAT was developed by Microsoft and has been used for the past decade in all machines. This includes flash-drives/SDs/Hard-Drives. The file-system has a stable limit of 16 exbibytes knowing it's limits, the other type file systems don't have a limit listed. ExFAT introduced metadata integrity with three checksums. The three are VBR (Volume boot Record), BIOS parameter block, OEM parameters. This help's detect and prevent data corruption when using the file system. The file-system is also favored in how lightweight it can be. This means how small a factor it can be, low memory, and low power requirements. The file system excels in being easy to use and quick to use as well.

exFAT is seen everywhere today. For all systems/physical drives, you can format them to be exFAT. In my days of playing Xbox, flash-drives needed to be formatted to be exFAT for data to be transferred over, which opened many users to using exFAT.

Google File System, 2003, in Linux

GFS was created to handle large data clusters. As Google came to rise to be the biggest search engine in the world, this is the system to help them grow to fame. They cut the data to chunks and used 64-bit labels to locate them. Metadata was not used in this type of file-system. GFS was also known for its scalability. The only issue was that the data was never balanced. Certain chunks of data would be hotspots of metadata. This would become an issue for garbage collection, data can just pile on top of each other in a certain chunk.

GFS was in action for a total of seven years. The end of its life was at the release of "Colossus". GFS reinvented search engines online and has brought other sister systems like MapReduce, which is used today for Hadoop framework.

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