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File Systems

NTFS

NTFS stands for New Technology File System and is the windows standard for large drives. NTFS provides many features not found in FAT systems, such as journaling (keeping track of changes), and file meta data. This meta data provides information about the file, such as size, date created, and author. NTFS also provides permissions, like marking a file as read only.

NTFS uses blocks to allocate memory, where each Block is the same size. These blocks are then grouped into clusters until enough have been allocated to fit the file. This means that internal fragmentation occurs. Information about the files is stored in the Mater File Table (MFT), such as the address of the first cluster to each file. The MTF contains a B-Tree that keeps track of all the clusters that make up a file, and thus these clusters can be scattered throughout the partition.

Because NTFS can scatter its clusters, the maximum file size is limited only to the size of the free space on the partition. Large files can be split into many different clusters, which can be located wherever there is sufficient space throughout the drive.